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UNITED STATES DEPARTMENT OF THE INTERIOR
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COMMERCIAL FISHERIES REVIEW



BUREAU OF COMMERCIAL FISHERIES
DONALD L. McKERNAN, DIRECTOR
DIVISION OF RESOURCE DEVELOPMENT
RALPH C. BAKER, ASST. DIRECTOR

A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
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5/31/68

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SHRIMP EXPLORATIONS OFF VANCOUVER ISLAND (BRITISH COLUMBIA) BY M/V JOHN N. COBB, OCTOBER-NOVEMBER 1962

By Lael L. Ronholt*

ABSTRACT

Sixty trawl drags were made in 30 to 105 fathoms between Cape Beale and Cape Cook. Three species of commercially important pandalid shrimp were found: the pink shrimp (*Pandalus jordani*), side-stripe shrimp (*Pandalopsis dispar*), and spot shrimp (*Pandalus platyceros*).

The best catches were made off Barkley Sound where 150 pounds of pink shrimp were taken in a one-half hour drag. Of the remaining 59 drags, 3 produced 50 pounds of pink shrimp, 6 yielded from 25 to 50 pounds, and 48 caught less than 25 pounds. Two drags failed, owing to gear damage.

For all drags the number of pink shrimp, heads-on, ranged from 95 to 182 per pound.

INTRODUCTION

From October 15 to November 16, 1962, the U. S. Bureau of Commercial Fisheries conducted a five-week exploratory shrimp cruise aboard the research vessel John N. Cobb. Explorations extended along the southwest coast of Vancouver Island, from Cape Beale northward to Cape Cook in 30 to 100 fathoms. The primary purpose of the cruise was to locate and delineate commercial concentrations of shrimp and trawlable ground previously unknown to the commercial fishing fleet. Secondary objectives were to collect data on the life history and size of the shrimp inhabiting these waters.

BACKGROUND

Although commercial shrimp fishing has not been conducted off the west coast of Vancouver Island, commercial fisheries for the pink shrimp (*Pandalus jordani*) have developed off Washington and Oregon. During the first two years of the fisheries, Washington shrimp landings rose rapidly to 6,729,000 pounds, but from 1958 to 1960 the yearly catch decreased to 1,805,000 pounds (table 1). The Oregon fishery was also characterized by a rapid rise in landings during the first two years. In 1959, 2,425,000 pounds of shrimp were landed, but in 1960 the catch decreased to 1,136,000 pounds. The decline in the Washington-Oregon shrimp landings, although not fully documented, is apparently the result of changes in the competitive economic status of the fishery combined with a reduction in catch per unit of effort and fishing intensity during the most recent years.

Table 1—Shrimp Landings off Oregon and Washington, 1955-60^{1/}

	1960	1959	1958	1957	1956	1955
	(1,000 lbs.)					
Oregon	1,136	2,425	1,523	495	6	-
Washington . . .	1,805	2,998	6,729	2,458	76	8

^{1/}Source: Pacific Marine Fisheries Commission, mimeographed report, December 1, 1961.

Results of shrimp explorations conducted off Oregon and Washington by the Oregon Fish Commission and the U. S. Bureau of Commercial Fisheries have been published elsewhere

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(Alverson, McNeely, and Johnson 1960; Pruter and Harry 1952; Ronholt and Magill 1961; Schaefers and Johnson 1957).

Prior work off Vancouver Island by the Bureau consisted of 8 Gulf shrimp trawl drags made off Barkley Sound and Pachena Point in 60 to 118 fathoms. Two drags, in 60 to 69 fathoms, produced from 300 to 400 pounds of pink shrimp per hour fished. The eight drags produced an average catch of 92 pounds of pink shrimp and 11 pounds of the side-stripe shrimp per hour (Alverson, McNeely, and Johnson 1960).

Explorations were conducted off the west coast of Vancouver Island by the Fisheries Research Board of Canada in 1955 (Butler and Dubokovic 1955). The area explored extended from off the Strait of Juan de Fuca to Cape Scott in 48 to 100 fathoms. Sixty-two drags were made with a small-mesh shrimp otter trawl. Results indicated that shrimp were not available in sufficient quantities to support a commercial fishery. Although the catch rates in some areas were comparable to established, inshore, small-boat fisheries, the availability did not appear great enough to support operations with larger vessels required to fish the offshore grounds. Greatest availability was found off Nootka Sound where one drag resulted in a catch rate of 324 pounds per hour. The shrimp taken during those explorations were quite small, averaging about 200 heads-on-shrimp to the pound.

During 1959, the Fisheries Research Board of Canada conducted further explorations off Nootka Sound (Butler, 1959). Five drags were made with a small-mesh shrimp trawl in 64 to 75 fathoms. Four drags produced 795, 348, 216, and 120 pounds of pink shrimp per hour. The availability of shrimp was higher than in 1954, and the number of heads-on-shrimp per pound ranged from 178 to 286. The shrimp taken at the southern end of the Nootka grounds were larger than those taken at the northern end.

REGION EXPLORED

The offshore region of Vancouver Island was selected for shrimp explorations because (1) no commercial shrimp fishing was being conducted in that area, (2) prior explorations had indicated the possibility of shrimp concentrations, and (3) the area lies adjacent to the known shrimp grounds off the Washington coast.

The Continental Shelf is relatively narrow, measuring approximately 40 miles in width off Cape Beale at the southern end, and 5 miles off Cape Cook at the northern end. The substrate is predominantly green mud, with some green sand or a mixture of green sand and mud. Trawlable grounds were intermingled with rough, rocky regions.

GEAR AND METHODS

FISHING GEAR: A Gulf-of-Mexico flat shrimp trawl measuring 43 feet along the foot rope (Schaefers and Johnson, 1957) was used at all stations. The net was constructed of $1\frac{1}{2}$ -inch mesh throughout.

The trawl doors were $2\frac{1}{2}$ by 5 feet, and weighed about 160 pounds each. Dandyline gear was not used, as the net was fastened directly behind the doors. Twenty-fathom bridles connected the doors to a single warp.

METHODS: The sampling procedure was designed to cover the 50- to 100-fathom depth interval. Two series of drags were alternated throughout the region as fishing conditions permitted. One series was made from 50 to 100 fathoms at 10-fathom intervals, the second from 55 to 95 fathoms at 10-fathom intervals.

Before fishing the net, a sounding transect was made of the area. During the sounding transect the depth recorder marks a permanent "trace," which shows the bottom configuration and indicates whether the bottom is soft or hard. When the recording revealed that the bottom was trawlable, the net was fished. All drags, with one exception, were 30 minutes long. Time was calculated from the time the net reached the bottom until retrievals were started. An attempt was made to maintain a constant depth during each drag.

The shrimp catch in each drag was analyzed by species. Representative samples of the commercially important species were frozen for examination ashore.

The associated fish catch was analyzed by species for: (1) number of individuals, (2) total weight, and (3) minimum and maximum length. Length frequencies were taken for some commercially important species.

RESULTS

In 60 drags, made between Cape Beale and Cape Cook in 30 to 105 fathoms, no concentrations of shrimp were found that, at this time, could be considered commercially exploitable.

Table 2 - Catch-Depth Relationship for the Pink Shrimp (*Pandalus jordani*) Taken from Cape Beale to Cape Cook

Depth Range in Fathoms	Number of Half-Hour Drags	Number of Half-Hour Drags Containing Shrimp	Total Shrimp Catch (in Pounds)	Average Catch (in Pounds) Per Half-Hour Drag
30-39	1	0	0	0
40-49	1	0	0	0
50-59	3	2	t	t
60-69	15	15	148	10
70-79	16	16	198	18
80-89	16, 47	15, 47	332	15
90-99	5	5	34	9
100-109	1	1	9	9
Total	58, 47	54, 57	721	12

t - ("trace") equals less than one pound.

The pink shrimp (*Pandalus jordani*) was the dominant species, and the largest catch was 150 pounds of pink shrimp from a half hour drag in the area off Barkley Sound. The number of pink shrimp (heads-on per pound) ranged from 95 to 182, and the average catch per half-hour by depth ranged from 0 to 18 pounds (table 2). Other commercially utilized species found were side-stripe shrimp and spot shrimp. For ease of discussion the region explored has been divided into the three following areas: Barkley Sound, Amphitrite Point to Esteban Point, and Esteban Point to Cape Cook.

BARKLEY SOUND: Ten drags were made off Barkley Sound in depths from 60 to 90 fathoms (fig. 1). Four drags produced pink shrimp at a higher rate than 25 pounds per half hour. The highest catch (drag number 1) was 150 pounds per half hour. Drag number 4 took 50 pounds; and drags number 59 and 60 produced 46 and 42 pounds, respectively. Pink shrimp were in highest numbers in the 80- to 89-fathom depth interval. Four drags in that depth range produced an average of 56 pounds per half hour (table 3).

Side-stripe and spot shrimp were also taken off Barkley Sound. Side-stripe shrimp were taken in 9 drags at rates from 1 to 7 pounds per half hour, with drag number 59

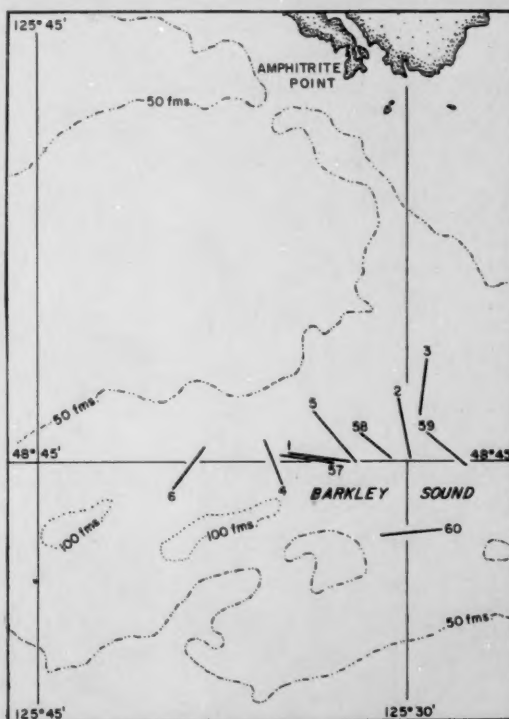


Fig. 1 - Gulf shrimp trawl drags off Barkley Sound.

Table 3 - Catch-Depth Relationship for the Pink Shrimp (*Pandalus jordani*) Taken off Barkley Sound

Depth Range in Fathoms	Number of Half-Hour Drags	Number of Half-Hour Drags Containing Shrimp	Total Shrimp Catch (in Pounds)	Average Catch (in Pounds) Per Half-Hour Drag
60-69	3	3	48	16
70-79	3	3	71	24
80-89	4	4	224	56
Total	10	10	343	34

producing the largest catch. Three specimens of spot shrimp were taken in drags number 59 and 60.

AMPHITRITE POINT TO ESTEBAN POINT: Twenty-four drags were made between Amphitrite Point and Esteban Point in depths from 30 to 109 fathoms (fig. 2). Only 4 drags pro-

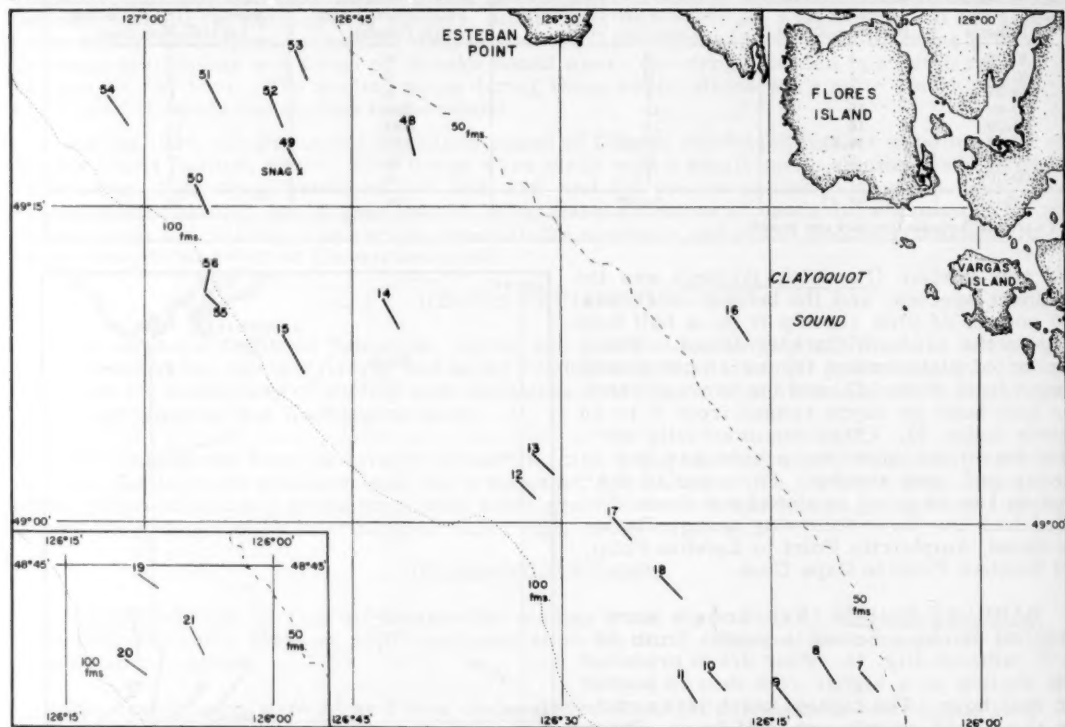


Fig. 2 - Gulf shrimp trawl drag between Amphitrite Point and Esteban Point.

Table 4 - Catch-Depth Relationship for the Pink Shrimp (*Pandalus jordani*) Taken from Amphitrite Point to Esteban Point

Depth Range in Fathoms	Number of Half-Hour Drags	Number of Half-Hour Drags Containing Shrimp	Total Shrimp Catch (in Pounds)	Average Catch (in Pounds) Per Half-Hour Drag
30-39	1	0	0	0
40-49	0	0	0	0
50-59	1	1	t	t
60-69	4	4	6	2
70-79	6	6	95	16
80-89	7.47	7.47	108	15
90-99	2	2	29	15
100-105	1	1	9	9
Total	22.47	21.47	247	11

t - ("trace") equals less than one pound.

duced pink shrimp at a rate of 25 pounds or more per half hour. Drags number 10 and 52 produced 50 pounds per half hour and drags number 11 and 13 yielded 25 pounds per half hour. The shrimp were most available in the 70- to 79-fathom depth interval, where six drags produced an average catch of 16 pounds per half hour (table 4). Two drags were not successful because of gear damage.

Side-stripe shrimp were not found in that area, but six specimens of spot shrimp were taken in drag number 12.

ESTEBAN POINT TO CAPE COOK: Twenty-six drags were made between Esteban Point and Cape Cook in 40 to 99 fathoms (fig. 3). Two drags, numbers 46 and 47, produced 30 and 40 pounds, respectively. The remaining 24 drags produced less than 25 pounds per half hour. The highest catches occurred in the 60- to 69-fathom depth range where eight drags produced an average catch of 12 pounds per half hour (table 5).

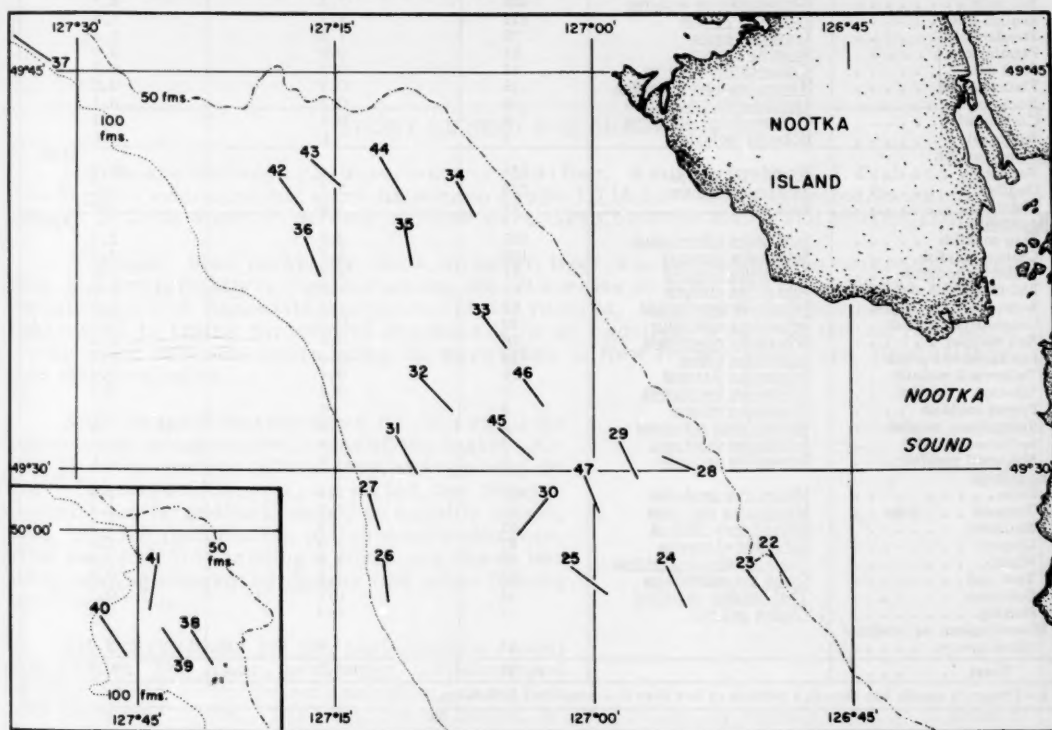


Fig. 3 - Gulf shrimp trawl drags north of Esteban Point.

Table 5 - Catch-Depth Relationship for the Pink Shrimp (*Pandalus jordani*) Taken from Esteban Point to Cape Cook

Depth Range in Fathoms	Number of Half-Hour Drags	Number of Half-Hour Drags Containing Shrimp	Total Shrimp Catch (in Pounds)	Average Catch (in Pounds) Per Half-Hour Drag
40-49	1	0	0	0
50-59	2	1	t	t
60-69	8	8	94	12
70-79	7	7	5	1
80-89	5	4	30	6
90-99	3	3	6	2
Total	26	23	135	5

t - ("trace") equals less than one pound.

Side-stripe shrimp were not found in that region; however, 1½ pounds of spot shrimp were caught during drags number 40 and 41.

FISH CATCH: Fish catches, which ranged from 1 to 412 pounds, were dominated by flatfish and elasmobranchs, which accounted for 46.6 and 34.9 percent, respectively, of the total fish catch (table 6). Ratfish and turbot were the two dominant species, constituting 29.6 and 26.6 percent of the total fish catch.

Table 6 - Species of Fish Encountered Showing Total Pounds Caught, Average Catch Per Half-Hour, and Percent of Total Fish Catch Based on 58.5 (30-Minute) Drags

Common Name	Scientific Name	Total Pounds	Average Catch (in Pounds) Per Half-Hour Drag	Percentage of Total Fish Catch
Flatfish:				46.6
Turbot	<i>Atheresthes stomias</i>	1,678	28.7	26.6
Dover sole	<i>Microstomus pacificus</i>	522	8.9	8.3
Rex sole	<i>Glyptocephalus zachirus</i>	420	7.2	6.7
English sole	<i>Parophrys vetulus</i>	113	1.9	1.8
Slender sole	<i>Lyopsetta exilis</i>	75	1.3	1.2
Petrale sole	<i>Opsetta jordani</i>	54	0.9	0.9
Sand dab	<i>Citharichthys sordidus</i>	42	0.7	0.7
Flathead sole	<i>Hippoglossoides elassodon</i>	15	0.3	0.2
Rock sole	<i>Lepidopsetta bilineata</i>	9	0.2	0.1
Curlfin sole	<i>Pleuronichthys decurcens</i>	8	0.1	0.1
Butter sole	<i>Isopsetta isolepis</i>	3	t	t
Elasmobranchs:				34.9
Ratfish	<i>Hydrolagus colliei</i>	1,838	31.4	29.2
Dogfish	<i>Squalus acanthias</i>	298	5.1	4.7
Skate	<i>Raja sp.</i>	61	1.0	1.0
Rockfish:				9.2
Flag rockfish	<i>Sebastes rubrivinctus</i>	135	2.3	2.1
Orange rockfish	<i>Sebastes pinniger</i>	129	2.2	2.1
Redstripe rockfish	<i>Sebastes proriger</i>	77	1.3	1.2
Blackblotched rockfish	<i>Sebastes crameri</i>	63	1.1	1.0
Bocaccio	<i>Sebastes paucispinis</i>	62	1.1	1.0
Greenstripe rockfish	<i>Sebastes elongatus</i>	30	0.5	0.5
Red snapper	<i>Sebastes ruberrimus</i>	26	0.4	0.4
Pacific ocean perch	<i>Sebastes alutus</i>	26	0.4	0.4
Yellowtail rockfish	<i>Sebastes flavidus</i>	26	0.4	0.4
Silvergray rockfish	<i>Sebastes brevispinis</i>	4	0.1	0.1
Pygmy rockfish	<i>Sebastes wilsoni</i>	2	t	t
Spingcheek rockfish	<i>Sebastes alacanus</i>	2	t	t
Splittnose rockfish	<i>Sebastes diploproa</i>	1	t	t
Stripetail rockfish	<i>Sebastes saxicola</i>	1	t	t
Roundfish:				8.5
Hake	<i>Merluccius productus</i>	150	2.6	2.4
Tomcod	<i>Microgadus proximus</i>	86	1.5	1.4
Blackcod	<i>Anoplopoma fimbria</i>	65	1.1	1.0
Lingcod	<i>Ophiodon elongatus</i>	61	1.0	1.0
Whiting	<i>Theragra chalcogrammus</i>	60	1.0	1.0
True cod	<i>Gadus macrocephalus</i>	58	1.0	0.9
Eulachon	<i>Thaleichthys pacificus</i>	42	0.7	0.7
Herring	<i>Clupea pallasii</i>	7	0.1	0.1
Miscellaneous or unidentified species		53	1.0	1.0
Total		6,302	106.5	100.2

t - ("trace") equals less than 0.1 percent or less than 0.1 pound per half-hour.

APPENDIX

A detailed fishing log showing the fishing positions, time on bottom, catch particulars, and other pertinent data for each drag is available as an appendix to the reprint of this article. Write for Separate No. 704 which contains "Table 7 - Cruise 56 Fishing Log: Shrimp Explorations off Vancouver Island, British Columbia, October-November 1962."

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SPORT FISHING FOR SHARKS

Sharks are increasing in importance as sport fish. A survey by the U. S. Fish and Wildlife Service estimated that sport fishermen caught 1,715,000 sharks in United States coastal waters in 1960; about 45 percent of those were taken between Maine and North Carolina.

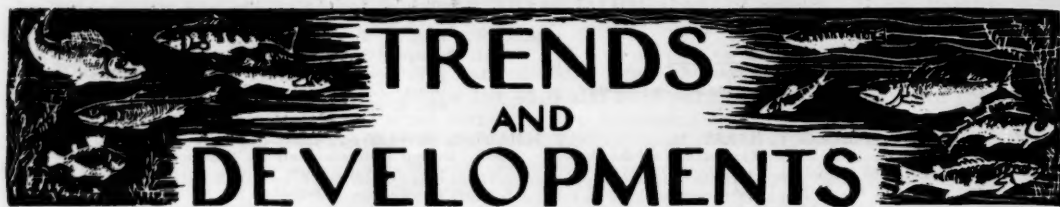
The mako, blue, porbeagle, white, thresher, tiger, and sawfish sharks rank as big-game fish, and are formally recognized among the 50 species of game fish on which the International Game Fish Association keeps worldwide records. Anglers in the Northeast who are interested in trying for record sharks are in an excellent area. Of the current world records for different tackle sizes, 21 were taken in New Jersey, New York, Rhode Island, and Massachusetts.

Anglers agree that few game fish can equal the spectacular leaps and swift runs of the mako. Although other species seldom leap, and opinions on their fighting qualities may be varied, one thing is certain: any large shark, caught on suitable tackle, will test the fisherman's patience and endurance. The excitement of landing a voracious shark has an appealing element of danger that other fishing seldom affords.

All sharks found off the northeastern coast are edible. The mako, porbeagle, thresher, and dogfish are considered most desirable; young fish are preferred to old. The meat can be boiled, fried, broiled, or chowdered, but it should be cooked or cured as soon as possible. Cured, the meat is excellent whether smoked, salted, or kippered.

Fresh mako, hammerhead, small dusky, and dogfish are good eating, particularly when cooked in sauces or with vegetables and other meats. These sharks have a distinctive flavor, milder than some of the more common food fishes. Elaborate preparations are not necessary, but culinary imagination is a helpful ingredient. (Anglers' Guide to Sharks of the Northeastern United States: Maine to Chesapeake Bay, Bureau of Sport Fisheries & Wildlife Circular No. 179, Washington, D. C.)





TRENDS AND DEVELOPMENTS

Alaska

EARTHQUAKE--PRELIMINARY APPRAISAL:

Damage to Fishery Industry: The fishing industry in central Alaska was adversely affected by the earthquake and resulting tidal waves of March 27, 1964. The U. S. Bureau of Commercial Fisheries reported that damage was centered in the Prince William Sound, Cook Inlet, and Kodiak Island areas which have important salmon, crab, and shrimp fisheries.

From the standpoint of damage to fisheries, Kodiak Island was hardest hit. In the Seward area the salmon, shrimp, and king crab fisheries were severely damaged. The salmon and Dungeness crab industries of Prince William Sound were hard hit. The damage to the fishing industry in Cook Inlet appeared to be relatively light.

As of mid-April the total damage to the Alaskan fishing industry could not be estimated. The earthquake raised the land mass 6 to 10 feet in Prince William Sound, making water depths inadequate at many docks, marine ways, and boat anchorages. On the other hand, in the Kodiak Island and Cook Inlet areas the land mass dropped and the sea level has been raised 5 to 8 feet, flooding or threatening dock installations and vessel facilities. It was believed that spring high tides might further damage fishery facilities.

Preliminary reports indicated little damage on the Alaska Peninsula, Aleutian Islands, and Bristol Bay. Equipment in Southeastern Alaska below Yakutat was virtually unaffected. Since the earthquake occurred during the off-season for most fisheries, operators had a little time for assessment and planning. It was believed there would not be too much difficulty in getting salmon canning into operation in the major areas by mid-June. But probably more difficulty would be experienced in resuming king crab industry operations on a normal scale. The production of canned salmon in Alaska this year should not be se-

riously affected. The halibut fleet was not affected by the earthquake.

It is too early to predict the long-range effect on the actual fishery resources of Alaska. The Federal and State Governments are marshalling their forces to help rebuild Alaska's fishing and other industries affected by the earthquake.

The Alaska Department of Fish and Game announced on April 2 that the deadline for the licensing of salmon fishing nets and vessels in the Kodiak, Prince William Sound, and Cook Inlet registration areas was extended by emergency regulation to May 15, 1964. This was done to give all fishermen and the industry a month in which to assess damage and losses which occurred to vessels and gear in those areas so they may license accordingly.

* * * * *

Salmon Harvest Not Jeopardized: Alaska fishing vessel and gear losses in the Cook Inlet, Kodiak, and Prince William Sound areas have not jeopardized the ability of the fishermen of the State to harvest the salmon runs during the 1964 season, according to the Alaska Commission of Fish and Game.

The effects of the earthquake and resultant tidal wave on the fishing fleet have been assessed by preliminary surveys. Information received by the Alaska Fish and Game Department indicates that the available Alaskan fishing gear will be able to harvest in an orderly manner the pink, red, and other salmon runs of Kodiak, Prince William Sound, Copper River, and Cook Inlet.

Nonresidents were being advised that the local gear is fully capable of taking the runs. Any significant increase of nonresident salmon gear would compound management problems and would result in greatly reduced fishing time for everyone. It would not be in the

best interest of the resource or the commercial fishermen to have an influx of gear from outside of Alaska during the coming season, the Alaska Commissioner of Fish and Game stated. (Alaska Department of Fish and Game, April 13, 1964.)

FOREIGN FISHING ACTIVITY OFF ALASKA, LATE MARCH 1964:

By the end of March 1964, the Soviet fishing fleet believed to be trawling for Pacific Ocean perch in the Gulf of Alaska southwest of Yakutat had increased to about 30 vessels.

Another Soviet fleet began fishing in the vicinity of Chirikof Island with indications that it also was trawling for Pacific ocean perch. This second fleet was estimated to consist of about 18 trawlers, 1 factoryship, and at least 2 reefers and support vessels.

The Soviet fleet in the northeastern Bering Sea was believed to consist of at least 125 trawlers, 15 reefers, about 4 factoryships, and about 3 cargo vessels. Major fishing emphasis was believed to have shifted from herring to Pacific ocean perch and, to a lesser degree, flounder and sole.

Two Japanese king crab factoryships, each accompanied by 6 catcher vessels, were reported to have left Japan on March 1 for the Bristol Bay king crab fishery. This year they are beginning the season two weeks earlier than last year. Their combined catch quota of 235,000 cases of canned king crab is the same as in 1963.

The Japanese shrimp factoryship Chichibu Maru, accompanied by 12 trawlers, was reported in March to be fishing for shrimp in the area northward of Unimak Pass in the Bering Sea. Although fishing operations were to be primarily for shrimp, Pacific ocean perch and herring are included as part of the production goal of the fleet.

SIX NEW VESSELS BEING BUILT FOR ALASKAN FISHERMEN:

Six new fishing vessels of modern design are being built at shipyards in the State of Washington for delivery to Alaskan fishermen. Three of those vessels are being financed with replacement loans and 3 are being built under the Mortgage Insurance Program

of the U.S. Bureau of Commercial Fisheries.

CANNED FISHERY PRODUCTS PACK, 1963:

The total wholesale value of the Alaska canned pack of crab, shrimp, clams, and salmon in 1963 was \$75.9 million as compared with the Alaska canned pack value of about \$100.9 million in 1962, according to preliminary data from the Alaska Department of Fish and Game.

The canned salmon pack in 1963 was 2,652,922 cases (48 1-lb. cans), down 858,190 cases from the 3,511,112 cases packed in 1962.

The king crab pack in 1963 amounted to 255,881 cases (48 7½-oz. cans) as compared with 187,112 cases in 1962, 152,719 cases in 1961, and 100,105 cases in 1960. The Dungeness crab pack in 1963 amounted to 15,650 cases (48 6½-oz. cans) as compared with 16,322 cases in 1962.

The shrimp pack in 1963 amounted to 61,950 cases (48 5-oz. cans) as compared to 86,184 cases in 1962.

The clam pack in 1963 amounted to 5,960 cases (48 4½-oz. cans) as compared to 10,200 cases in 1962.

Note: See Commercial Fisheries Review, July 1963 p. 28.



Alaska Fishery Investigations

TAGGED KING CRAB RETAINS TAG OVER SIX YEARS:

Intensified king crab fishing in the Kodiak Island area yielded a return of 178 tags during March 1964. This was the largest monthly return of tags since November 1962. Most of the returns were from inshore locations. On January 28, 1964, a tagged crab was caught near the Shumagin Islands, which had been released within 10 miles of the area six and one-half years earlier. This is the longest period between release and recapture recorded to date. During that time the crab grew from 4.1 to 7.6 inches in carapace width. The tag probably remained on the crab through 5 or 6 molts.

SOUTHEAST PINK EGG SURVIVAL RATE CONSIDERED GOOD:

The winter survival of salmon eggs was measured during March by egg-pump sampling at Little Port Walter, Traitors Cove, and Olsen Bay. Survival rates of pink salmon eggs and fry in Little Port Walter and Traitors Cove streams were good. Above the medium high-tide level survival ranged from 9 to 43 percent. Only 0.5-percent survival was noted for Traitors Cove chum salmon which had been subjected to severe post-spawning low flows. Olsen Bay sampling in Prince William Sound showed a fair survival of preemergent pink fry and a good survival of chum fry. The effects of the severe earthquake on preemergent fry survival was unknown. Sampling was being done in March by the Alaska Department of Fish and Game to obtain postquake fry abundance in Prince William Sound. The Bureau's Auke Bay Laboratory biologists were to sample Olsen Bay again since it was near the center of the disturbance. This may give some indication as to the effects of the earthquake.

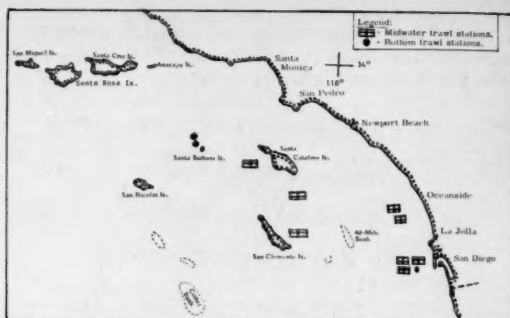


California

BOTTOM-TRAWLING EXPLORATIONS OFF SOUTHERN CALIFORNIA:

M/V "N. B. Scofield" Cruise 64-S-1 (February 25-March 11, 1964): The objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield were to: (1) conduct ecological surveys of representative areas and to evaluate methods and goals for possible future work; (2) continue exploration of offshore areas for bottom-trawling grounds; and (3) collect a sample of kelp bass (Paralabrax clathratus) for reproduction studies. The area of operations was in the southern California coastal waters from northern Channel Islands to the California-Mexican boundary.

Because of continual gales it was not possible to occupy trawling stations during more than half of the cruise period. Eight midwater trawling stations and 3 bottom-trawling stations were occupied. All tows were for 30 minutes, although the total time from beginning to completion of a deep mid-depth haul is at least 2½ hours. Where possible, all fish and invertebrates were identified and enumerated and common fish species were measured. Unidentified and unusual



Shows station pattern of M/V N. B. Scofield Cruise 64-S-1, February 25-March 11, 1964.

marine specimens were saved for specialists. A number of rare cephalopods were obtained for a special study sponsored by California's Department of Fish and Game. A large-pelagic octopus of the genus Alloposus was caught off San Diego, and may be a first for California waters. Other bathypelagic fish species including lanternfish, lightfish, and an anglerfish were collected on this cruise.

Santa Barbara Island Area: Bottom trawls were made in depths of 220-245 fathoms. Fair numbers of Dover sole (Microstomus pacificus), a few sablefish (Anoplopoma fimbria), and ratfish (Hydrolagus coliei) as well as 10 longnose skates (Raja rhina) were caught along with a few other flatfish and a fair number of rockfish. This area appears to be generally trawlable on the basis of two exploratory cruises. A number of unusual cephalopods, and large catches of bathypelagic fishes were made. Work had to be terminated in this area as weather and sea conditions worsened and could not be resumed until conditions improved seven days later off San Diego.

San Diego Area: Bottom trawl work was discontinued near the end of the cruise when the net was torn up west of Pt. Loma. Several midwater hauls were made off San Diego and La Jolla which yielded a number of interesting bathypelagic fish and invertebrates. A night haul was made west of Pt. Loma with 200 fathoms of cable out which produced results comparable to those obtained with 700 fathoms in daytime hauls.

Santa Catalina and San Clemente Islands Area: Good collections of deep-water fish and invertebrates were made off Santa Catalina Island and between there and San Clem-

ente Island. Good kelp bass fishing at Santa Catalina Island yielded a sample of kelp bass needed by the Department's Sportfish Project for studies in reproduction.

Kelp bass fishing at San Clemente Island was poor

Note: See Commercial Fisheries Review, February 1963 p. 20.

* * * * *

PELAGIC FISH POPULATION SURVEY CONTINUED:

Aerial surveys to determine the distribution and abundance of pelagic fish schools were continued during flights over the inshore area off the California coast by aircraft of the California Department of Fish and Game. The following airplane spotting flights were made from February 10 to April 3, 1964:

Airplane Spotting Flight 64-3 (February 10-11, 1964): Cessna "182" 9042T scouted the inshore area from Point Ano Nuevo to the United States-Mexican Border during the survey flight.

Weather conditions were quite variable on both days of this survey. From Point Sur north, visibility was hindered by low clouds and rain squalls. South of Point Sur, conditions improved and were generally good for the balance of the survey.

On February 10 the area from Point Ano Nuevo to Point Vicente was scouted. One Pacific sardine (Sardinops caeruleus) and two northern anchovy (Engraulis mordax) schools were seen between Point Sur and Piedras Blancas.

On February 11, the area from Point Vicente to the United States-Mexican Border was scouted. Only six small anchovy schools were seen that day, all in the general area of Los Angeles-Long Beach harbor.

Airplane Spotting Flight 64-5 (February 19-21, 1964): Beechcraft N5614D surveyed the inshore and offshore waters from Long Beach, Calif., to Point Eugenia, Baja California, during this flight.

On the first day's flight the area from Long Beach to Point Eugenia-Cedros Island was scouted. Air and water visibility were exceptionally good but at Cedros Island a high cloud cover and strong ground winds caused poor water visibility. Those conditions persisted during the return flight along

the eastern shore area of Sebastian Viscaíno Bay, north to Point San Antonio. From that Point north to Long Beach, aerial spotting conditions were excellent.

Concentrations of northern anchovies (Engraulis mordax) were found in the Dana Point, Oceanside, and Carlsbad areas where none had been seen on the previous week's flight. South of the United States-Mexican Border a large concentration of mixed anchovy and Pacific sardine (Sardinops caeruleus) schools were encountered at Cape Colnett. The largest concentration of sardines (41 schools) was between Point Eugenia and Scammons Lagoon.

Gray whales (Eschrichtius glaucus) were common along most sections of the coastline. At Scammons Lagoon over 30 whales were counted just inside the mouth. That lagoon is one of their major breeding areas.

On February 21 the southern California Channel Islands area was scouted. Strong desert winds off southern California precluded flights the day previous. The 21st was clear except for the Santa Catalina Island area where a low haze limited visibility to between 5 and 8 miles. Despite poor visibility around the island, 83 anchovy schools and several schools of Pacific bonito (Sarda chiliensis), jack mackerel (Trachurus symmetricus), and other unidentified pelagic fish were seen. Over 100 Pacific pilot whales (Globiocephala scammoni) comprising 15 schools were sighted along the western side of the island.

On this flight four small sardine schools were found near Santa Barbara Island. Seven gray whales and one unidentified mammal were seen near Santa Rosa and Santa Cruz Islands; 16 individual gray whale and two pilot whale schools were spotted in the vicinity of San Clemente Island.

Airplane Spotting Flight 64-6 (March 9-11, 1964): Cessna "182" 9042T surveyed the inshore area from Moss Landing, Monterey Bay, to the United States-Mexican Border on this flight.

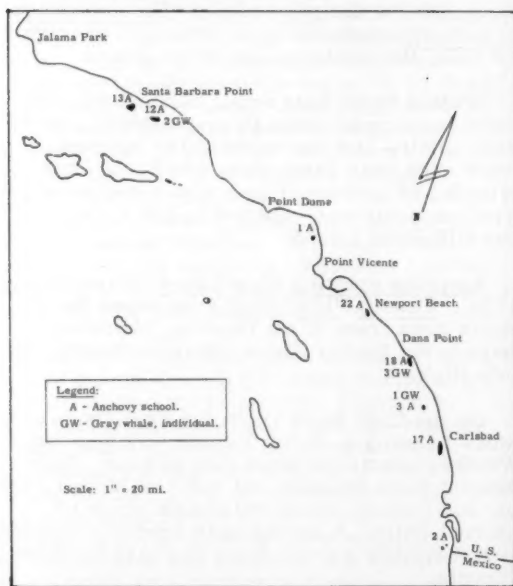
On the first day's flight the area from Moss Landing to Point Vicente was scouted. Weather conditions were fair to poor. Rain squalls were encountered north of Moss Landing and broken, scattered clouds south to Mussel Point. A smoky haze severely limited aerial visibility from Santa Barbara to Point Vicente.

A total of 8 northern anchovy (*Engraulis mordax*) schools were sighted between Santa Barbara and Point Vicente and 29 gray whales (*Eschrichtius glaucus*) were seen between Santa Barbara Point and Monterey Bay.

The area between the Mexican Border to Point Vicente was scouted on the second day's flight. Air and water visibility were generally good with the exception of the San Diego area where rain squalls were encountered. The largest anchovy school group encountered this year (247 schools) was sighted between Laguna Beach and Point Vicente.

The area from Point Vicente to Piedras Blancas was scouted on the last day of this survey. Thick smoke and haze persisted south of Jalama Park. Low broken clouds were encountered until reaching Estero Point and thereafter rain squalls prevailed. Despite very limited visibility, anchovy school groups were located off Port Hueneme and in Santa Monica Bay.

Airplane Spotting Flight 64-7 (April 1-3, 1964): Cessna "182" 9042T surveyed the in-shore area from Pigeon Point, San Mateo County to the United States-Mexican Border during this survey flight. No scouting was done on April 1, the first day of the survey, because of poor weather.



The area from Pigeon Point to Point Vicente was scouted on April 2. High winds caused rough seas throughout the area flown and no fish schools were seen.

On the last day of the flight the area from the United States-Mexican Border to Jalama Park was surveyed. Water and air visibility were generally good. Northern anchovy (*Engraulis mordax*) school groups were seen at Newport Beach, Dana Point and Carlsbad in the morning. One other group of anchovies was sighted at Santa Barbara Point. The large anchovy school group sighted near Newport Beach in March had diminished to only a few scattered schools.

Note: See *Commercial Fisheries Review*, February 1963 p. 20; April 1964 p. 12.

* * * * *

HEARINGS ON EXPERIMENTAL ANCHOVY INDUSTRIAL FISHERY:

The California State Fish and Game Commission held a special meeting in Monterey, Calif., May 11, 1964, to hear public comments on a proposed experiment to allow commercial fishermen to take a maximum of 13,000 tons of anchovies for reduction purposes, during the 12-month period beginning April 1, 1964, and ending March 31, 1965. (California Department of Fish and Game, April 6, 1964.)

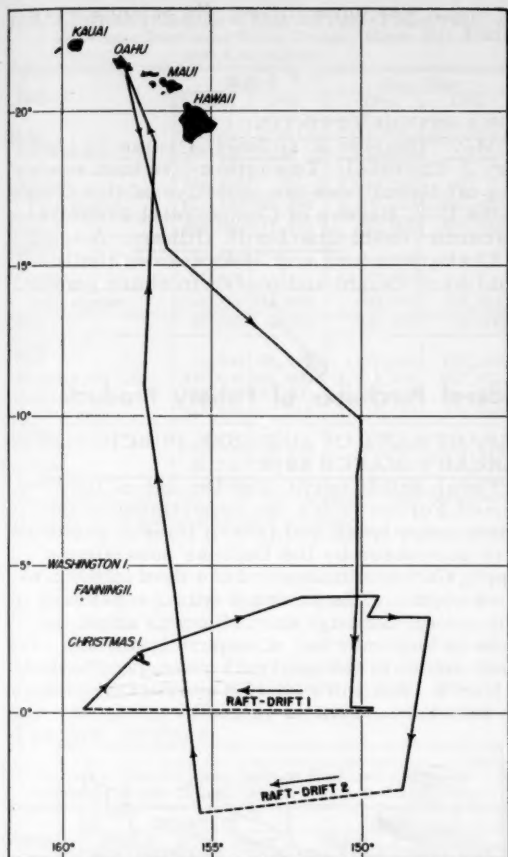


Central Pacific Fisheries Investigations

PELAGIC FISH POPULATION STUDIES CONTINUED:

M/V "Charles H. Gilbert" Cruise 71-- PART I (February 3-6, 1964): To selectively fish for small skipjack for visual acuity studies and small yellowfin for sound perception studies was the principal purpose of Part I of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. During 3 days of fishing in an area 3 to 5 miles off Makapu, Oahu, a total of 86 skipjack tuna, 82 yellowfin tuna, and 26 frigate mackerel were caught and brought back alive to shore tanks. The captured fish ranged in size from 1½ to 2 pounds.

PART II (February 14-March 27, 1964): To make observations on the ecology and behavior of the marine community in the area of a drifting raft and to collect specimens in the raft community were the main objectives of Part II of this cruise by the Charles H. Gilbert.



M/V Charles H. Gilbert Cruise 71--Part II, February 14-March 27, 1964.

On February 22, 1964, a raft was launched in an area of upwelling close to the Equator at latitude $00^{\circ}09' N.$, longitude $149^{\circ}35' W.$ to begin drift #1. Over a period of 193 hours 31 minutes it drifted due west for 576 nautical miles at an average rate of 2.5 knots until recovered March 1, 1964, at latitude $00^{\circ}10' N.$, longitude $159^{\circ}12' W.$ It was decided not to duplicate drift #1 as specified on the cruise plan, but to start drift #2 at latitude $4^{\circ} N.$ near the boundaries of the South Equatorial and Equatorial Counter Currents, an area where tuna had been sighted earlier. Poor visibility and rough seas prevented launching in that area, so drift #2 was started south of the Cromwell Current at latitude $02^{\circ}33' S.$, longitude $148^{\circ}143' W.$ During drift #2 the raft over a period of 215 hours 30 minutes drifted for 395 miles at an average rate of

1.8 knots. Drift #2 was terminated March 20, 1964, at latitude $03^{\circ}26' S.$, longitude $155^{\circ}18' W.$

Fish species observed during the drifts were: skipjack (*Euthynnus pelamis*)--adults and juveniles; yellowfin (*Neothunnus macropterus*)--small adults and juveniles; wahoo (*Acanthocybium solandri*); common dolphin (*Coryphaena hippurus*)--adults; little dolphin (*C. equiselis*)--adults and juveniles; mackerel scad (*Decapterus pinnulatus*); rainbow runner (*Elegatis bipinnulatus*); pilotfish (*Naucratus ductor*); rudderfish (*Psenes cyanophrys*); man-of-war fish (*Nomeus gronovii*); shark-sucker (*Remora remora*); puffer (*Arothron* sp.); flying-fish (*Exocoetidae*); blue shark (*Prionace glauca*); whitetip shark (*Pterolamiops longimanus*); whale shark (*Rhincodon typus*); and manta ray (*Manta* sp.). In addition, single specimens of an unidentified shark, free swimming remora, juvenile carangid, turtle, and porpoise were seen.

A greater variety and larger number of most species were observed around the raft during drift #2 than during drift #1. No fish accumulated around the raft in commercial quantities. A large percentage of the rudderfish and pilotfish which collected at the raft were caught with the raft purse net at the end of each drift. The only other fish captured at the raft was a single mackerel scad. Attempts to capture dolphin, wahoo, and other mackerel scad were unsuccessful.

Nineteen hundred feet of 16 millimeter color and black-and-white movie film and 548 color and black-and-white still pictures were taken of the marine life sighted from the raft and of general operations. Detailed field notes were kept during the 90 hours and 31 minutes of observation during drift #1 and 100 hours and 30 minutes of observation during drift #2. Attempts to track individual fish with sonar were unsuccessful, but the presence of fish beneath the raft out of visual range was monitored with the sonar during drift #2 for 15 minutes out of every hour during daylight hours.

Other experimental work during the cruise included efforts to sample tuna schools by live-bait and long-line fishing; to tag tuna when possible; and to collect larval and juvenile forms of tuna and tunalike fish with night-light fishing and plankton tows.

Five long-line stations were occupied with 5-basket 6-hook gear while the raft was drifting. During drift #1, the Cromwell Current set the long-line gear to the east while the raft drifted west, making it necessary to take the gear in early in order to keep the raft in sight. While long lining during drift #2, the research vessel was tied to the gear for part of the time to increase the duration of the set. A total of six whitetip sharks was caught but none was tagged. Six additional whitetip sharks were caught by hand-line and tagged. Two common dolphin were caught with squid hooks from the vessel. No other fish were caught from the vessel in the drift area. Two skipjack tuna, 2 wahoo, and 1 dolphin were caught by trolling.

Sixteen 1-hour night-light fishing stations were completed from the vessel while the raft was drifting. No tunalike fish were captured or seen. Several species of dolphin (*Coryphaena*) were collected. A total of 53 plankton tows was made.

Bathythermograph casts were made and surface salinity readings were taken at 3-hour intervals on all cruise tracks and at 6-hour intervals when drifting. In an effort to determine variability in an area where internal waves may be important, hourly bathythermograph casts, salinity samples, and surface temperatures were taken during a 24-hour period which began on February 24 at latitude 00°09' N., longitude 152°27' W. and terminated on February 25 at latitude 00°10' N., longitude 153°38' W.

The thermograph was operated continuously while at sea.

Drift cards were released with each bathythermograph cast north of latitude 12° N. on the outbound and inbound tracks and when each drift began and ended. A total of 920 drift cards was released.

A secchi and forel color reading were made at noon each day while drifting.

Flyingfish which landed on deck were collected for stomach analysis.

A standard watch for fish, birds, and aquatic mammals was made during daylight hours while under way and when the raft was drifting. A total of 4 skipjack schools and 11 unidentified schools were sighted. Of those, only one school was seen while drift-

ing and it was unidentified. No schools were fished.

TUNA STUDIES CONTINUED:

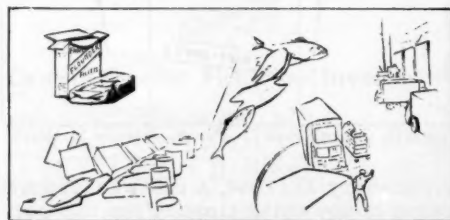
M/V "Charles H. Gilbert" Cruise 70 (January 3-22, 1964): To capture live tuna in waters off Hawaii was the objective of this cruise by the U.S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert. A total of 23 skipjack tuna and 38 kawakawa (little tuna) were caught and placed in shore ponds.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MARCH 1964:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products were purchased by the Defense Subsistence Supply Centers in March 1964 than in the previous month. The increase was 3.6 percent in quantity, although the value was about the same in both months. Compared with the same month in the previous year, purchases in March 1964 were up 15.4 percent in quantity and 4.9 percent in value.



Total purchases in the first 3 months of 1964 were up 11.0 percent in quantity but down 6.3 percent in value from those in the same period of the previous year. In 1964, there were larger purchases of flounder fillets, scallops, oysters, and clams, but smaller purchases of cod fillets, haddock fillets, and halibut steaks.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, March 1964 with Comparisons

QUANTITY				VALUE			
March		Jan.-Mar.		March		Jan.-Mar.	
1964	1963	1964	1963	1964	1963	1964	1963
..... (1,000 Lbs.) .....				..... (\$1,000)			
2,382	2,064	6,790	6,117	1,236	1,178	3,555	3,792

Table 2 - Selected Purchases of Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, March 1964 with Comparisons

Product	March		Jan.-Mar.	
	1964	1963	1964	1963
..... (Pounds)				
Shrimp:				
Raw headless	99,150	1/	282,050	1/
Peeled and deveined	46,472	1/	231,222	1/
Breaded	456,200	1/	1,094,200	1/
Total shrimp	601,822	494,290	1,607,472	1,626,633
Scallops	299,900	171,168	691,000	570,968
Oysters:				
Eastern	121,530	1/	326,918	1/
Pacific	21,676	1/	73,806	1/
Total oysters	143,206	156,075	400,724	349,522
Clams	43,850	8,744	120,358	79,700
Fillets:				
Cod	22,700	58,360	127,246	175,598
Flounder and sole	316,000	307,800	1,173,816	987,852
Haddock	217,650	189,300	2/577,894	684,220
Ocean perch	348,520	422,258	1,011,120	970,590
Steaks:				
Halibut	112,500	152,308	307,025	402,428
Salmon	25,735	17,405	49,302	51,535
Swordfish	2,610	6,130	5,310	9,180

1/Breakdown not available.

2/Includes 8,650 pounds of haddock portions.

Canned: In the first 3 months of 1964, total purchases of the 3 principal canned fishery products (tuna, salmon, and sardines) were much higher than in the same period of the previous year. The increase was due to larger purchases of tuna and salmon. The gain was partly offset by smaller purchases of canned sardines.

Table 3 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, March 1964 with Comparisons

Product	QUANTITY				VALUE			
	March		Jan.-Mar.		March		Jan.-Mar.	
	1964	1963	1964	1963	1964	1963	1964	1963
..... (1,000 Lbs.)								
Tuna	529	686	1,457	696	236	352	644	358
Salmon	1/	-	679	6	2/	-	416	4
Sardine	19	49	79	143	8	22	30	61

1/Less than 500 pounds.

2/Less than \$500.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because data on local purchases are not obtainable.

(2) See Commercial Fisheries Review, May 1964 p. 16.



Fur Seals

PRICES FOR ALASKA SKINS AT SPRING 1964 AUCTION:

The spring auction in 1964 (April 16-17) of United States Government-owned fur seal

skins yielded \$2.28 million. The average price per skin received for male fur seal skins (dyed Black, Kitovi, and Matara) was \$105.45 and for female skins (dyed Black, Kitovi, and Matara) the average price was \$71.16. At the fall 1963 auction, male and female skins were offered in mixed lots and the overall average price for the three colors of skins was \$111.72. Of a total of 10,311 Black skins sold at the October 1963 auction, 10,137 were male and the average price for those, including the small number of female skins, was \$126.13. At the spring 1963 auction, the three colors of male skins brought a record high average price of \$122.52.

The average price received for both male and female fur seal skins (dyed Black, Kitovi, and Matara) at the April 1964 auction was \$90.60. Lakoda, or female sheared sealskins, brought an average price of \$43.82, or much higher than the average of \$40.63 received at the fall 1963 auction, and more than the average of \$43.09 received at the spring 1963 auction.

Average prices per skin received for processed male fur seal skins at the spring 1964 auction were: Black, \$107.65; Kitovi, \$88.42; Matara, \$108.77. Average prices for both male and female dyed skins at the spring 1964 auction were (average for fall 1963 auction in parentheses): Black, \$92.47 (\$126.13); Kitovi, \$81.66 (\$95.58); Matara \$91.58 (\$103.94).

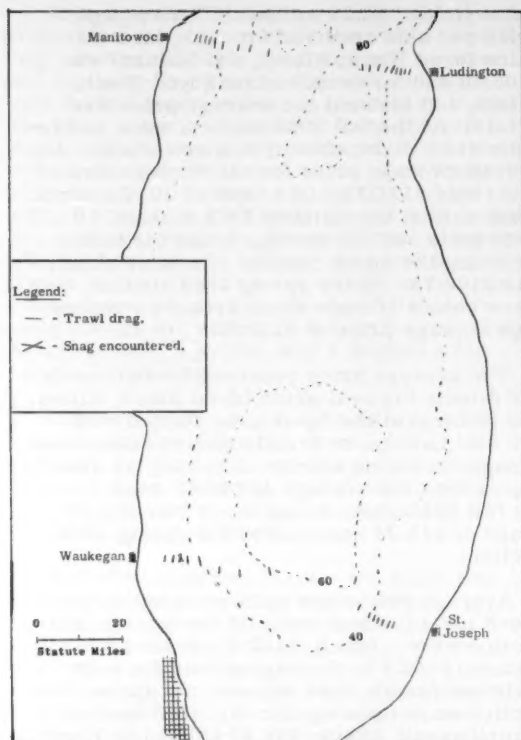
Note: See Commercial Fisheries Review, December 1963 p. 25 and June 1963 p. 24.



Great Lakes Fisheries Exploration and Gear Research

SEASONAL DISTRIBUTION AND ABUNDANCE OF ALEWIFE AND CHUB STOCKS IN LAKE MICHIGAN STUDIED:

M/V "Kaho" Cruise 16 (March 31-April 9, 1964): To extend knowledge of the seasonal distribution and abundance of alewife and chubs and their availability to bottom trawls was the primary objective of this cruise in central and southern Lake Michigan by the U. S. Bureau of Commercial Fisheries exploratory fishing and gear research vessel Kaho. Particular attention was given to determining the differentials in east-west and north-south distribution and commercial potential of those fish stocks. Other activities of the cruise



Lake Michigan explorations M/V *Kaho* Cruise 16 (March 31-April 9, 1964).

were concerned with collecting length-frequency data on alewife and chubs to supplement material collected earlier, and collecting samples of fish, water, and bottom materials for laboratory analysis relating to special studies.

FISHING OPERATIONS: A total of 34 trawl drags were completed with a 52-foot (headrope) fish trawl in 6 days of operation--8 drags were made from 20 to 60 fathoms off St. Joseph, Mich., and 8 from 20 to 60 fathoms off Waukegan, Ill.; 9 drags were made from 20 to 70 fathoms off Manitowoc, Wis., and 9 from 20 to 70 fathoms off Ludington, Mich. All drags were of 30 minutes duration and were made in one direction only. Minor gear damage occurred during one drag at 30 fathoms off Waukegan. Bottom topography and vertical distribution patterns of fish were continuously recorded with a high-resolution depth-recorder.

FISHING RESULTS: The investigations, completed along the lakewide transects be-

tween St. Joseph and Waukegan, and between Manitowoc and Ludington revealed significant differences in depth distribution, abundance, and species interrelationship from both south and central Lake Michigan and from one side of the lake to the other. The most noteworthy feature observed was the almost total absence of alewife from trawl catches off Manitowoc.

Alewife dominated the catches from 25 to 35 fathoms off St. Joseph, and also from 45 to 50 fathoms off Waukegan, and at 40 fathoms off Ludington. The best alewife catch was 945 pounds made in a 30-minute drag at 50 fathoms off Waukegan.

Good catches of chubs (310 to 405 pounds per 30-minute drag) were made in 40 and 45 fathoms off St. Joseph, in 35 and 40 fathoms off Waukegan, and in 35 fathoms off Ludington.

Echo-sounder operations revealed good to excellent concentrations of alewife and chubs in midwater depths at 35 to 50 fathoms off Ludington.

Only limited catches of species other than chub or alewife were taken during the cruise.

Other Species Taken in Lake Michigan by M/V *Kaho*

Species	No. of Drags Yielding	Pounds/Drag	Combined Catch (Pounds)
Herring	3	6-47	60
Sculpin	19	6-160	647
Smelt	5	2-105	124
Sucker	1	1	1
Trout-perch	2	4-17	21
Whitefish	1	3	3
Sea lamprey	1	1	1

HYDROGRAPHIC DATA: Bathythermograph casts were made at key stations, and air and surface water temperatures were recorded continuously. Surface water temperatures ranged from 34° to 35° F. during the cruise.

Note: See *Commercial Fisheries Review*, May 1964 p. 18.

Hawaii

FISHERIES LANDINGS, 1962-1963:

Commercial landings of fish and shellfish in the State of Hawaii in 1963 were down 10.7 percent in quantity and 4.9 percent in value from those in the previous year, due mainly to a drop in landings of skipjack tuna and big-eyed tuna.

Hawaiian Commercial Fisheries Landings and Ex-Vessel Value, 1962-1963				
Species	1963		1962	
	Quantity 1,000 Lbs.	Value \$1,000	Quantity 1,000 Lbs.	Value \$1,000
Tuna and Tunalike Fish:				
Albacore.....	15.0	4.7	16.7	4.0
Big-Eye.....	948.3	501.7	1,220.8	598.1
Yellowfin.....	384.9	153.2	396.8	143.0
Skipjack.....	8,099.3	1,089.8	9,415.4	1,174.0
Bonito or little tuna.....	60.2	8.3	13.3	2.4
Total tuna and tunalike fish	9,507.7	1,757.7	11,063.0	1,921.5
Other fish and shellfish...	2,248.9	924.3	2,106.7	897.8
Total fish and shellfish...	11,756.6	2,682.0	13,169.7	2,819.3

The Island of Oahu was the State's leading fishery center in 1963 with a catch of 8,630,351 pounds. The Island of Hawaii was in second place with a catch of 1,651,787 pounds, followed by the Island of Maui with a catch of 1,222,536 pounds. The remainder of the catch was landed at ports on the Islands of Kauai, Lanai, and Molokai. (Hawaiian Department of Land and Natural Resources, March 30, 1964.)

Note: See Commercial Fisheries Review, June 1963 p. 33.



Industrial Fishery Products

OBSERVATIONS ON FISH MEAL USE IN ANIMAL FEED:

Some research results that showed that fish meal added to all-vegetable laying rations resulted in small body weight increases, increased egg production, and improved efficiency were presented by the head of the Department of Poultry Science, Texas A. and M. University. The results were presented at the National Fisheries Institute (NFI) Symposium and the Maryland Nutrition Conference held at Washington, D. C., on March 11, 1964, and March 12-13, respectively. Least cost for feed per unit of production was achieved with 5-percent fish meal in the ration. The results of the research suggest that both amino acids and unidentified growth factors contributed to the improved performance with fish meal. The results also demonstrated that not all fish meals of like nitrogen content are of equal value in egg production.

At the Maryland Nutrition Conference, a researcher from the Poultry Science Department, University of Maryland, gave some results of experiments in which solvent-extracted fish meal was used at relatively high levels in broiler rations. The objective of the experiments was to determine the feasibility of using solvent-extracted (low fat)

fish meals instead of regular fish meals when price structures of feed ingredients are such as to result in maximum profit when fish meal is used at levels as high as 15 percent of the ration. The objective of substituting solvent-extracted fish meal for regular fish meal under such conditions is to avoid the relatively high levels of fish oil in the rations that may accompany the use of regular fish meal at high concentrations. The trials demonstrated that solvent-extracted fish meal even at levels as high as 15 percent of the ration (highest level tested) yields results equal to those with regular fish meal and, consequently, that solvent-extracted fish meal can be substituted for regular fish meal in poultry rations whenever, in the judgment of the ration formulator, it is advisable to do so.

Two nutritionists of the U. S. Bureau of Commercial Fisheries Technical Advisory Unit visited feed mills in North Carolina, Tennessee, and Virginia, and scientists at the Universities of North Carolina and Tennessee the latter part of March. Their observations were:

The mean levels of fish-meal utilization in the area visited appear to be: (1) in broiler starter rations 5 percent; (2) in broiler finisher rations 3.5 percent; (3) in breeder rations 2.5 percent; and (4) in laying rations 0.5 percent. Those are fairly liberal fish-meal allowances and that may be attributed in part to the fact that most of the mixed feed producers visited by the Bureau's nutritionists are able to obtain fish meal in bulk truck shipments directly from the fish-meal plants.

One feed producer in North Carolina stated that he is marketing a pullet ration containing only 10 percent protein, a level 2 percent lower than the minimum recommended by nutritional authorities at his State Experiment Station and equal to only five-eighths of that recommended by the National Research Council. The net effect of the low-protein ration is to delay egg production by about 3 weeks and to lower feed costs somewhat during the pullet year. The use of less than the recommended levels of protein conceivably could have unfortunate long-term effects.

Trials completed recently at the University of Tennessee suggest that cattle can utilize menhaden oil at a level equal to 2 to 3.5 percent of the ration if an all-grain ration is fed, or in amounts equal to the oil that would be consumed under such conditions if some or all of the feed is given as roughage. The re-

sults of those trials will be published if plans made at that time are carried out. The importance of those results rests upon the fact that fat at a level equal to 2 percent of the feed consumed is often sprayed upon the roughage fed cattle in fattening operations. Stabilized vegetable and animal fats are presently used, but it appears that fish oil could be used more conveniently than fats that must be heated before spraying on the feed. However, at prevailing prices, fish oil was considered too valuable for that use.

Poultry trials have been carried out at the University of Tennessee in which growing chicks responded equally well to 1-, 2-, or 5-percent fish meal in rations that were 25 percent protein. At a protein level as high as that, it is doubtful that "extra" methionine and lysine of fish meal were influential in promoting growth. Therefore it is logical to conclude that the growth-promoting effect observed was due to UGF (unidentified growth factors) in the meal used in the trials and that the level of UGF was high enough to meet requirements even when fish meal was fed at the 1-percent level.

Findings of the Bureau's nutritionists based on their observations demonstrate that a number of problems exist in the industrial fish products market. Examples of those problems are:

1. A number of mixed feed producers pointed out that if the price of fish meal continues to advance, the product may be "priced off the market."
2. Some feed mill operators expressed dissatisfaction with the fact that they are able to obtain domestically-produced fish meal throughout the year.
3. Some feed men pointed out that the quality of imported fish meal is extremely variable and that most such meal has been very "dusty" (low oil content) during the past year.
4. Many producers use less fish meal in mixed feeds than research findings have shown to be optimum.

U. S. FISH MEAL, OIL, AND SOLUBLES:

Production by Areas, March 1964: Preliminary data on U. S. production of fish meal,

oil, and solubles for March 1964 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U. S. Production ^{1/} of Fish Meal, Oil, and Solubles by Areas, March 1964 (Preliminary) with Comparisons				
Area	Meal Short Tons	Oil 1,000 Pounds	Solubles	Homog- enized ^{3/}
March 1964:			.. (Short Tons) ..	
East & Gulf Coasts	762	66	186	-
West Coast ^{2/} . .	2,240	276	1,111	-
Total	3,002	336	1,297	-
Jan.-Mar. 1964				
Total	6,946	3,025	3,245	-
Jan.-Mar. 1963				
Total	7,800	1,168	4,179	300
^{1/} Does not include crab meal, shrimp meal, and liver oils.				
^{2/} Includes American Samoa and Puerto Rico.				
^{3/} Includes condensed fish.				



Maine Sardines

CANNING SEASON OPENS:

The 94th consecutive Maine sardine canning season opened April 15, 1964, but no production of any consequence was expected until late May, when the fish usually arrive in in-shore waters in adequate numbers for canning. Twenty-five canneries were put into operating condition to be ready for the schools of herring.

The size of the pack will depend upon the fish supply and market conditions and it is too early to predict either of those factors, according to the Executive Secretary of the Maine Sardine Council. He said that inventories held by the canners were slightly larger than normal but not enough so as to be burdensome. (Editor's Note: Canners' stocks of Maine sardines amounted to 1,063,000 standard cases on January 1, 1964, and 1,092,000 standard cases on January 1, 1963, according to the U. S. Bureau of the Census, Canned Food Report, January 1, 1964.) The Secretary further stated that Maine sardines now held more than 50 percent of the total U. S. sardine market and had been making a steady gain each month from the low point of 28 percent which occurred in 1961 and 1962 following the unusually small Maine sardine pack in 1961. (Maine Sardine Council, April 16, 1964.)

WORLD'S FAIR DISPLAY:

The Maine Sardine Council is participating in an outdoor food exhibit on the grounds of the New England Pavilion at the New York World's Fair, and the industry's products are featured in the Pavilion's Country Store and Restaurant.

The outdoor setting features the products of 12 New England food manufacturers through the use of large (4 x 6 feet), lighted photographs mounted on raised triangles of unusual design. The Council's message to the public hails Maine sardines as "the little brother of the Maine lobster" and advises that the product is healthful and nourishing and that more than 50 brands are on sale everywhere in the United States. The photograph shows numerous ways in which sardines may be prepared and served; boiled lobsters with netting and other gear are depicted in the background.

A sizable display of sardines is placed in the typical New England Country Store while the product is on the restaurant menu as a permanent item and is also served in the cocktail room as an appetizer. Recipe books and other material on Maine sardines are distributed at the State's information center within the New England Pavilion buildings.

The Maine State Department of Sea and Shore Fisheries is cooperating with the Council on the outdoor exhibit. (Maine Sardine Council, April 18, 1964.)

**National Fisheries Institute****AID TO UNITED STATES FISHING INDUSTRY PROPOSED AT CONVENTION:**

Bold measures are needed to bolster the Nation's fishing industry, Under Secretary James K. Carr of the U. S. Department of the Interior said April 25, 1964, at the National Fisheries Institute (NFI) Convention in Seattle, Wash. Citing an earlier arid land Federal reclamation program, the Under Secretary suggested the possibility of federally financed low-cost loans for construction of modern fishing vessels that would meet certain strict standards on size of vessel and equipment to make Americans more competitive with foreign fishermen.

The Under Secretary called upon members of NFI to consider some means of using Federal help along with other measures to revitalize the United States fishing industry.

He told the group if a man wants to build a \$150,000 vessel in Canada, he can go into business with a cash outlay of \$9,000. He said that even under legislation pending before the United States Congress to provide additional assistance, an American fisherman-owner would need a considerably larger cash outlay to put the same vessel in the water in competition with his Canadian neighbor.

The Interior Under Secretary said that in five years the catch of United States fishermen has dropped from second to fifth place in worldwide competition. He told the fish industry representatives, "now the United States is trailing Japan, the Soviet Union, Red China, and Peru." He declared the United States fishing fleet is antiquated in comparison to some modern fleets of other nations.

He pointed out that more than half of the world's population suffers from malnutrition or undernutrition, and that the importance of fish food proteins grows with each passing month. He told the group that the life-giving food from the sea will be the great arsenal in the future battles against poverty, hunger, and disease. He also said, "In 1963, for the first time in the history of the Republic, over half (56 percent) of the United States fishery supply was derived from imports. In contrast, less than 14 years ago (in 1950), only 25 percent of the supply was imported."

**North Atlantic Fisheries Exploration and Gear Research****OCEAN PERCH GILLING BY TRAWL NETS STUDIED:**

M/V "Delaware" Cruise 64-1 (January 23-February 1, and February 5-27, 1964): To investigate the gilling effects upon ocean perch of 3-inch synthetic mesh trawl cod ends (approximately equivalent to 3.5-inch doubled manila mesh) as compared to commonly used 2.3-inch manila-twine cod ends was the principal purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The tests were made as part of a study to determine the effects of

a minimum-size 3-inch mesh on the fishing industry and on the fishery resources.

The two sizes of cod ends were changed and measured every 2 tows throughout the cruise to permit evaluation of ocean perch gilling. A total of 39 of the 63 tows made during the cruise caught sufficient fish to be of value in the study. Bad weather throughout the entire cruise and poor fishing in many areas limited the number of tows and the size of catches.

All tows were made off the coast of Nova Scotia with the majority taking place in in-shore waters ranging in depth from 72 to 100 fathoms. Some tows were also made in depths of 100 to 235 fathoms. The length of tows varied from 45 minutes to 2 hours. All fish gilled in the cod end were measured; males and females were weighed in separate groups. A random sample was taken from the fish free in the cod end for weight and length measurements.

Because of the adverse conditions and limited time, sufficient tows were not made to establish conclusive evidence on the difference between the gilling effects of the two cod ends. However, the test tows indicated that the 3-inch nylon cod end gilled more fish than the 2.3-inch double manila cod end. But the 3-inch nylon net allowed a relatively higher escapement than the 2.3-inch double manila. For complete analysis, all results were turned over to a representative of the International Commission for the Northwest Atlantic Fisheries.

ELECTRICAL TRAWLING TESTS CONTINUED:

M/V "Delaware" Cruise 64-2 (March 11-April 3, 1964): To continue to test and evaluate the effect of an electric field upon the catch of a commercial otter-trawl net when the field is used as an adjunct to the net was the main purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Work during the cruise was devoted to gear improvement and the determination of whether fish-size selectivity is possible through the use of varying pulse frequencies.

In accordance with the experience gained during Delaware Cruise 63-9, the electrical unit was successfully modified to provide a

pure pulse frequency throughout the electrical field. In addition, heavy coaxial conductor cable was used as the towing warp. A modification to the earlier method of attaching the doors also improved the handling quality of the gear and helped to eliminate previous difficulties.

The net transformers were mounted on the net headrope during the latter part of the cruise. That shift in position, from the footrope, appeared to be worthwhile. Not only were some electrical problems reduced but net handling was made easier.

Fishing operations were seriously hampered by weather conditions; however, 46 tows were made during the cruise.

A preliminary examination of fish-size selectivity data indicated that the electrical discharges applied during the cruise did not give the desired results. Future work will probably be conducted with an increase in the number of electrodes. Efforts to further reduce power requirements and to attain fish-size selectivity by species will be continued.

Note: See Commercial Fisheries Review, Jan. 1964 p. 21.

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TUNA AND SWORDFISH SURVEY CONTINUED:

M/V "Delaware" Cruise 64-3 (April 16-June 5, 1964): The U. S. Bureau of Commercial Fisheries exploratory vessel M/V Delaware began a 51-day cruise on April 16, 1964, to continue a systematic survey of the distribution and abundance of tuna and swordfish in the North Atlantic. This is the eleventh long-line cruise in the series. During this cruise, special attention was given to waters off the Middle Atlantic Bight between the 100-fathom curve of the Continental Shelf and the western edge of the Gulf Stream. Emphasis was placed on giving coverage to those areas which have not been surveyed during previous investigations.

Operations of the Delaware included day and night sets of long-line gear to sample tuna and swordfish below the surface; day-time surface trolling to sample tuna in the upper water layer; bathythermograph transects to examine thermal relationships; tuna tagging in cooperation with the Woods Hole Oceanographic Institution to study seasonal tuna movements; and tuna blood sampling in cooperation with tuna subpopulation studies

being conducted at the U. S. Bureau of Commercial Fisheries biological laboratory in Honolulu, Hawaii.

Plans called for a commercial tuna-fishing vessel to cooperate with the project by fishing in the general area of the investigation and comparing its results with those of the Delaware.

Visiting scientists were aboard the Delaware as guest cooperators during the cruise. Two port calls were scheduled at Norfolk, Va.

Note: See Commercial Fisheries Review, Aug. 1963 p. 36.

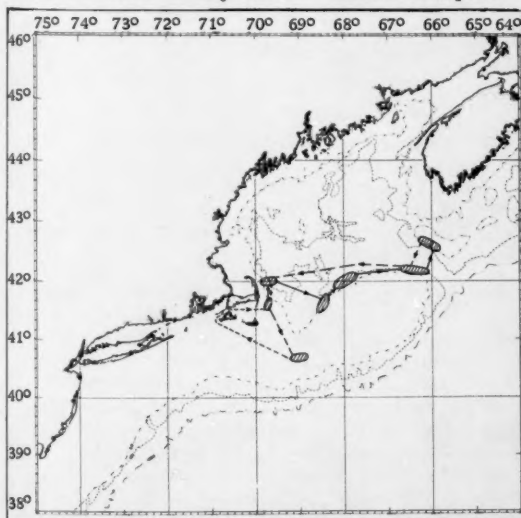


North Atlantic Fisheries Investigations

HADDOCK SPAWNING AND MATURITY INVESTIGATED:

M/V "Albatross IV" Cruise 64-3 (March 17-26, 1964): To collect blood samples from spawning populations of haddock, to record haddock maturity, and to collect live haddock were the objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. The area of investigation was Nausets, Chatham, Cultivator, Northern Edge and Browns Bank.

Trawling at 15 stations (23 tows) was made on a 12-hour a day basis. Blood samples



Shows sampling areas for Cruise 64-3 of the research vessel Albatross IV, March 17-26, 1964.

were taken from 25 haddock at each of the first 10 stations and tested with antisera for blood type. A total of 41 bathythermograph casts were made during the cruise.

Agglutination responses for 250 haddock were tabulated and the state of maturity was noted. Fertilized haddock eggs and live haddock were brought back to the Bureau's Biological Laboratory at Woods Hole, Mass.

Note: See Commercial Fisheries Review, April 1964 p. 23, February 1964 p. 36.

HADDOCK COLLECTION:

M/V "Albatross IV" Cruise 64-4 (April 6-8, 1964): To obtain live haddock for experimental purposes was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. A search was conducted on fishing grounds off Massachusetts, but haddock were not located where they could be hand-lined so no live specimens were obtained. Two trawl collections of haddock were made.

FLOUNDER TAGGING:

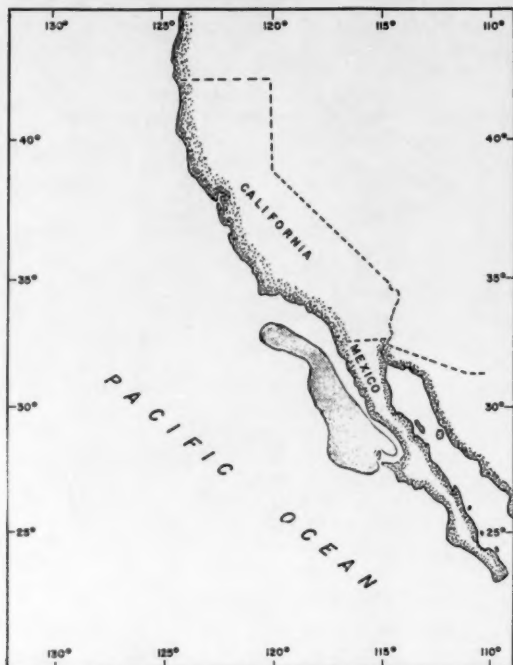
M/V "Albatross IV" Cruise 64-5 (April 8-14, 1964): To tag blackback flounder off New England in the area of Nantucket Shoals, Nauset Beach, and Georges Bank was the main objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. Blackback were caught by otter trawl at selected stations and tagged with Petersen disc tags. A total of 1,315 were tagged at Nantucket Shoals, 550 at Georges Bank, and 15 along Nauset Beach. Fin ray counts were made on some tagged and untagged blackbacks, and information on blackback spawning was also obtained. The cruise was cut short by mechanical difficulties.



North Pacific Exploratory Fishery Program

DISTRIBUTION AND ABUNDANCE OF ADULT HAKE OFF SOUTHERN CALIFORNIA AND NORTHERN MEXICO STUDIED:

M/V "John N. Cobb" Cruise 64 (February 5-March 19, 1964): Pelagic trawling for adult hake (*Merluccius productus*) during a predicted period of peak spawning was one of the principal objectives of this six-week cruise



Shows area of operations during John N. Cobb Cruise 64, February 5-March 19, 1964.

off southern California and northern Mexico by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. Other objectives of the cruise were to: (1) attempt capture using standard and modified versions of the "Cobb" pelagic trawl; (2) evaluate three independent depth telemetry systems and a new type dual-frequency echo-sounding machine; and (3) determine configuration, drag ratio, and general utility of monofilament webbing in trawl construction.

A predetermined trackline and station pattern was followed during most of the cruise. Echo-soundings were made continuously along tracklines and during drags made at stations. Maximum depth tows to 250 fathoms were made at those stations where echo-soundings indicated an absence of marine life. Whenever echo-soundings indicated presence of marine life, tows were made at the indicated depth. Whenever relatively good echo-soundings were encountered, the station pattern was interrupted to allow repetitive drags and possible correlation of soundings with catches of hake.

Severe weather conditions during most of the cruise limited the number of drags to a total of 35. Adult hake in amounts up to 350 pounds per 1-hour tow were taken in five of the drags. Two drags made through a fair showing of fish during the latter part of the cruise yielded 300 and 150 pounds of hake, respectively. The concentration, centered at 250 fathoms, dispersed in the evening hours and attempts to relocate the shoal on the following day were fruitless.

A correlation was apparent between the vessel's hake catches and the occurrence of hake eggs and larvae as determined by the Bureau's research vessel Black Douglass. Good catches of eggs and larvae were made at stations adjacent to hake-producing drags.

Incidental fish catches were limited to small amounts of anchovies, bonitos, and deep-sea varieties such as lanternfish, fanged viperfish, and snipe eels.

Accurate determination of depth of tows was provided by three independent depth telemetry systems. Two of the systems utilized electrical core towing cable and one of the systems functioned via acoustic transmission. All three systems functioned well during the entire cruise. Variation of indicated depth as shown on each system was less than 2 percent. Performance of a new type electrical towing cable was excellent as no evidence of conductor damage or deterioration of steel strands was noted. A two-pen electronic strip chart recorder was used to record depth and water temperature during each drag.

A modified version of the "Cobb" pelagic trawl, constructed mainly of monofilament webbing, was shown to have approximately 20 percent less drag which allowed an average towing speed of three knots. A conventional "Cobb" pelagic trawl (also used on the cruise) averaged 2.5 knots.

The John N. Cobb was scheduled to depart Seattle April 13, 1964, for six weeks of exploratory bottom trawling (Cruise 65) off the Washington coast (from the Columbia River to the Strait of Juan de Fuca.) The primary objective is to locate new trawling grounds along the coast of Washington.

Note: See Commercial Fisheries Review, June 1963 p. 38.

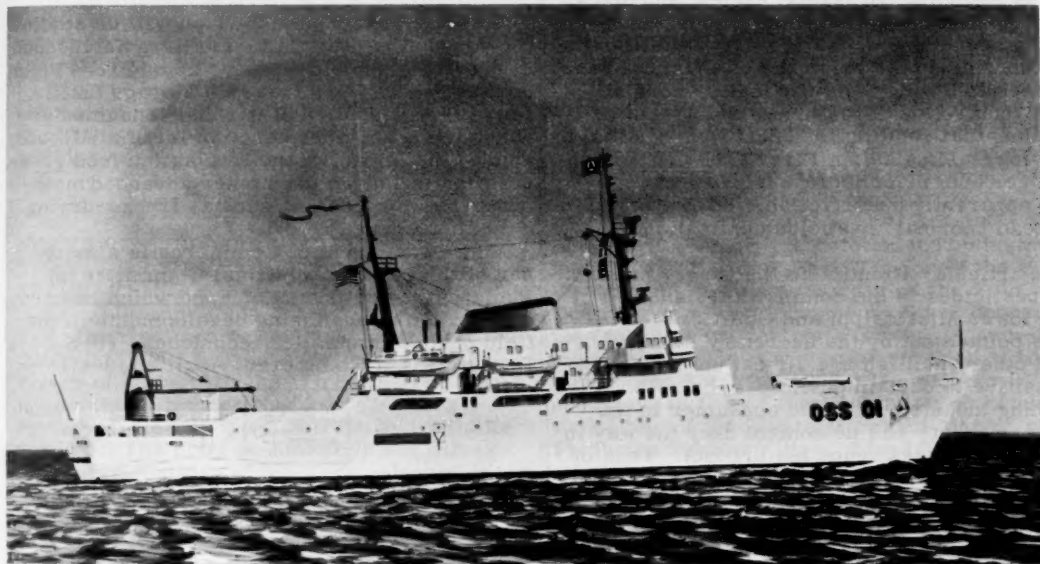


Oceanography

RESEARCH VESSEL "OCEANOGRAPHER" LAUNCHED:

The Oceanographer, the largest and most modern oceanographic research vessel ever built in the United States, was launched April 18, 1964, at Jacksonville, Fla. The 303-foot

Built in 1897, it was commissioned by the Navy in World War I and was credited with sinking an enemy submarine. Again, in World War II, it saw service with the Navy in the Pacific. Between the two wars, the vessel was engaged in oceanographic research for the Coast and Geodetic Survey. The original Oceanographer was decommissioned in 1944



Artist's conception of the research vessel Oceanographer.

vessel is the first of two automated Class I oceanographic survey ships being built for the U. S. Coast and Geodetic Survey. The second vessel, the Discoverer, will be identical with the Oceanographer. The two vessels will cost \$14,000,000.

The Oceanographer, whose keel was laid in July 1963, is slated to be commissioned in 1965. A centralized control system in the engine room will provide automatic starting and stopping of machinery, programming of the fuel and ballast system, and the automatic recording of operating data at a master-control station. In addition to automation, closed-circuit television will be provided throughout the engine room.

The new ship is not the first to bear the name Oceanographer. It was preceded by a veteran of two world wars with a long and varied career. The first Oceanographer was originally a \$3-million luxury yacht.

and subsequently scrapped. (U. S. Coast and Geodetic Survey, April 15, 1964.)

Note: See Commercial Fisheries Review, Aug. 1963 p. 43.



Pollution

USE OF PESTICIDES ENDANGER COMMERCIAL FISHERIES SAYS INTERIOR SECRETARY:

Growing evidence of widespread environmental contamination from pesticides was cited by Secretary of the Interior Stewart L. Udall, who testified before a special Senate subcommittee called by Senator Ribicoff of Connecticut during early April 1964. The Secretary called for a nationwide pesticide monitoring program and an end to the use of highly toxic chemicals whose spread cannot be controlled. He said the problem of pesticides had become even more acute in recent

months and that new data were strengthening earlier warnings and demonstrating new hazards to man and wildlife.

The Secretary noted new evidence that DDT is responsible for the failure of lake trout to reproduce, and that it reduced reproductive success among several species of birds including pheasants, eagles, and black ducks. The most disturbing evidence now being accumulated, the Secretary said, points to the widespread existence of chemical pesticides following their use under "normal" and "controlled" conditions. Much data including that relating to recent fish kills on the lower Mississippi River does not relate to accidents or deliberate misuse, but are the apparently uncontrollable effects of widespread "normal" pesticide application.

Particular attention to the danger posed by pesticides to the commercial fisheries of the lower Mississippi and Gulf Coast areas was pointed out by the Secretary. Shrimp and other shellfish are almost unbelievably sensitive to certain pesticides, he said. The fishing industry--like the consumer in the supermarket--has no control over the way in which pesticides reach his product. Tens of thousands of jobs and millions of dollars of valuable fishery products may ultimately be at stake, Secretary Udall emphasized. He stated that "unlike farmers, our commercial fishermen do not use the pesticides themselves and they must depend on effective governmental action to prevent damage to the resources they depend upon for a living."



Preservation

IRRADIATION PRESERVATION OF FOOD STUDIED FOR COMMERCIAL IMPLICATIONS:

An extensive study of the commercial implications of the preservation of food by irradiation was announced April 2, 1964, by the U. S. Department of Commerce.

"Cooperative efforts among various governmental agencies including the Department of Defense and the Atomic Energy Commission have clearly indicated that the irradiation of food for the purposes of preserving it is perfectly safe and has many economic advantages," said the Administrator of the Commerce Department's Business and De-

fense Services Administration, which will coordinate the study. Explaining the purpose of the study, he stated, "The widespread use of such foods in the relatively near future will affect processing, storage, distribution, and marketing techniques for a great many food products. We want to learn in depth as soon as possible just what the implications are."

Aspects of the subject which will be studied include (1) the potential use of irradiated foods in providing proteins to developing areas which do not have conventional food storage facilities; (2) the question of winning consumer understanding and acceptance of irradiated foods; and (3) the impact of the irradiation food preservation technique upon other advanced methods of food processing such as freeze-drying.

The Department of Commerce is a member of the Interdepartmental Committee on Radiation Preservation of Food which has been collating promising developments in the field of food irradiation techniques. (U. S. Department of Commerce, April 2, 1964.)



Salmon

FRASER RIVER SOCKEYE LOSSES INVESTIGATED:

Studies into the environmental factors related to the serious mortality of unspawned Fraser River sockeye in 1961 and 1963 were carried out during the winter of 1964 by the staff of the International Pacific Salmon Fisheries Commission. The investigations revealed that several factors are involved in any excessive mortality regardless of the actual cause of death.

High or above normal temperatures and early arrival of the sockeye on the spawning grounds appear to be closely associated with any excessive loss of unspawned fish. Early timing in migration, while related to high temperature, appears to be the more important of the two factors. Density of spawners has been found to be a major factor when other influences are adverse, but seems of little importance when those influences follow a normal pattern.

Because of the complexity of the problem, fishery biologists need the advice of experts in other scientific fields. Once an understanding is reached of the cause or causes of

premature death in sockeye spawners, suitable controls possibly can be designed and placed in operation. While the costs of such controls may be high, the economic losses already sustained are also high. Remedial measures required to prevent such losses in the future could be economically justifiable.

In an attempt to develop a program to solve the problem, the Commission called a special meeting in New Westminster, B. C., Canada, April 20, 1964, which was attended by experts in the fields of biochemistry, physiology, ecology, pathology, and medicine. (International Pacific Salmon Fisheries Commission, April 15, 1964.)

NORTHWEST RIVERS RECEIVE RECORD PLANTS OF SILVER AND SPRING CHINOOK YEARLINGS:

In early April 1964, over 5.5 million yearling silver salmon fingerlings weighing a total of 160,000 pounds were released in rivers of Washington and Oregon. The fish were raised in three National Fish Hatcheries operated by the U. S. Fish and Wildlife Service. The plant included 590,000 silver salmon fingerlings which were released in Eagle Creek from the Eagle Creek National Fish Hatchery, near Estacada, Oreg. The Columbia River received the remainder of the fish, which included 2,300,000 from the Willard National Fish Hatchery, Willard, Wash., and 2,700,000 from the Little White Salmon National Fish Hatchery, Cook, Wash.

The April release was the largest plant of silver salmon fingerlings in the Northwest area from National Fish Hatcheries.

Northwest rivers also received a record plant of yearling spring chinook salmon from National Fish Hatcheries in April 1964 when 3 million spring chinook fingerlings were released from the Carson National Hatchery into the Wind River near Stevenson, Wash., and a total of 1,600,000 were released from the Eagle Creek National Hatchery into the Clackamas River, its tributary--Eagle Creek, and the Molalla River. The spring chinook yearlings were spawned by the 1962 runs of adult spring chinook salmon that ascended the new fishways on Eagle Creek and Wind River. Those streams became accessible to migrant salmon when fishways were constructed to bypass falls that were impassable.

The young salmon will migrate to the Pacific Ocean, where they will spend several years. Upon reaching maturity and returning to the Columbia River system, they will contribute to both the sport and commercial fisheries.

SITE OF FIRST PACIFIC COAST SALMON CANNERY DESIGNATED NATIONAL HISTORIC LANDMARK:

The site of the first Pacific Coast salmon cannery, built in Sacramento, Calif., 100 years ago, has been designated a National Historic Landmark, Congressmen Robert L. Leggett (Vallejo) and John E. Moss (Sacramento) of California announced this past April.

The site, which was determined by historians of the National Park Service of the U. S. Department of the Interior, is on the Yolo County side of the Sacramento River opposite the foot of Sacramento's K Street. A commemorative plaque was to be unveiled at the location on April 28, 1964. The principal speaker was to be Senator Bartlett of Alaska, a member of the Senate Merchant Marine and Fisheries Subcommittee. Lloyd Turnacliiff, a fish wholesaler in Sacramento and also a former vice president of the National Fisheries Institute, was to be master of ceremonies.

The forerunner of today's multimillion dollar Pacific salmon canning industry was begun in the spring of 1864 by three former Maine fishermen, two of whom were brothers. One of the brothers entered the fishing business in Sacramento in 1852 and was joined by his brother four years later. The business at first was limited to the sale of fresh and salted salmon. The third member to join the enterprise was a tinsmith as well as a fisherman and had experience canning lobster and salmon in New England. The newly formed company was short on capital, so he brought along some crude can-making equipment to Sacramento with him.

In the spring of 1864, the three partners enlarged the original cabin and purchased a large scow for additional factory floor space. They added an 18 by 24-foot extension to the cabin of the scow for a can-making shop. The salmon were packed in salted water, and the cans were boiled about an hour at 230 degrees. Later a pickle was added to each can to replace the salt. The cans were painted a bright red with a combination of red lead, turpentine,

and linseed oil. As a result, the consumer identified canned salmon only by the flaming red can even when there was no label.

The new company had a difficult time at the beginning. The equipment they had was crude and every operation had to be done by hand. At least half the cans manufactured in the first year burst at the seams. Despite, the handicaps, the company sold 2,000 cases at \$5 per dozen cans the first year, and the business was launched. Because of the success of this first cannery, numerous other canneries sprang up. By 1882 there were 20 canneries along the Sacramento River producing about 200,000 cases of salmon a year. After that peak year the industry declined because of a sharp reduction in the number of salmon entering the Sacramento River. The shortage of fish was attributed to silting of the river by hydraulic mining and salmon canning on the Sacramento River was discontinued after 1919.

The original and first salmon-canning company was gone long before the peak pack of 1882. A decline in salmon runs in the Sacramento in 1865 started the partners of that first cannery looking for a better source of supply. The following year they moved to Eagle Cliff, Wash., and established a cannery there.

Today's \$100 million salmon-canning industry in the United States is a direct outgrowth of the pioneering efforts of that first salmon-canning enterprise in Sacramento. The Alaska canned salmon pack in 1963 totaled 2.7 million cases, or about 80 percent of the total United States canned salmon pack of 3.3 million cases. The remainder was packed by canneries in Washington and Oregon.



Shrimp

UNITED STATES:

Breaded Production, 1963: Breaded shrimp production during the fourth quarter of 1963

Month	Quantity 1,000 Lbs.
October	7,390
November	6,129
December	5,513
Total	19,032

Table 2 - U. S. Production of Breaded Shrimp by Areas, October-December 1963

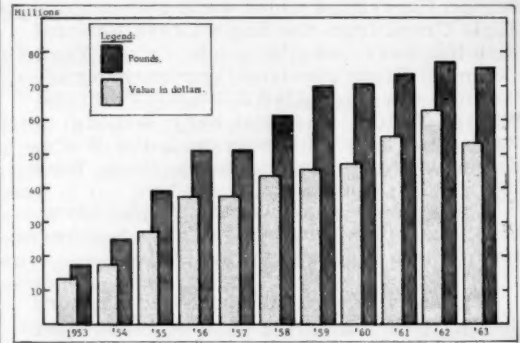
Area	No. of Plants	1963		
		October	November	December
Atlantic States	19	2,175	1,962	1,458
Gulf and Inland States	16	4,715	3,680	3,566
Pacific States	8	500	487	489
Total	43	7,390	6,129	5,513

Table 3 - Total U. S. Production and Value of Breaded Shrimp by States, 1963

State	No. of Plants	1,000 Pounds	1,000 Dollars
Massachusetts, New York, and New Jersey	8	2,029	1,835
Pennsylvania and Virginia	4	623	648
Georgia	6	14,298	8,477
Florida	10	22,992	17,282
Louisiana and Alabama	6	3,016	1,790
Texas	9	26,535	18,850
Arizona and California	9	5,546	4,156
Total	52	75,039	53,038

was 19 million pounds and for the entire year it was 75 million pounds, according to preliminary data.

Breaded shrimp production has gradually increased over the years. From production of 6.6 million pounds in 1950 with a wholesale value of \$4.2 million, the quantity increased



U.S. production and value of breaded shrimp 1953-63.

to 77.3 million pounds with a value of \$62.8 million in 1962--a record year. Compared with the peak year, production in 1963 was three percent less in volume and 16 percent less in value.

Supply and Disposition, 1961-1963: The available United States shrimp supply in 1963 was 16.7 percent greater than in 1962 and increased 30.4 percent from 1961. United States shrimp imports again were at a record high

U. S. Supply and Disposition of Shrimp, 1961-63

U. S. Supply and Disposition of Shrimp, 1961-63				
Item		1/1963	2/1962	1961
. . . (1,000 Lbs. shell-on) . . .				
Supply:				
Domestic landings	heads-on	240,300	191,105	174,494
"	(heads-off)	(150,244)	(119,154)	(103,865)
Foreign product of U. S. fisheries ^{3/}	heads-on	-	479	-
"	(heads-off)	(-)	(301)	(-)
Imports ^{4/}	heads-on	266,205	242,580	213,957
"	(heads-off)	(167,344)	(152,504)	(134,564)
Total supply	heads-on	506,505	434,184	388,451
"	(heads-off)	(317,588)	(271,959)	(238,429)
Disposition (approximate)				
Frozen:				
Headless ^{5/}	heads-on	6/	253,935	238,901
"	(heads-off)	(6/)	(159,708)	(147,625)
Meat, raw (includes some cooked) ^{5/}	heads-on	6/	81,959	81,107
"	(heads-off)	(6/)	(51,045)	(49,810)
Meat, cooked ^{5/}	heads-on	6/	15,202	8,114
"	(heads-off)	(6/)	(9,568)	(4,830)
Breaded ^{5/}	heads-on	6/	77,698	74,717
"	(heads-off)	(6/)	(48,950)	(44,505)
Specialties	heads-on	6/	1,011	574
"	(heads-off)	(6/)	(692)	(342)
Total frozen	heads-on	399,060	342,240	318,428
"	(heads-off)	(250,474)	(214,693)	(196,524)
Canned	heads-on	68,266	56,522	41,484
"	(heads-off)	(42,479)	(35,604)	(24,872)
Dried	heads-on	7,531	3,296	4,499
"	(heads-off)	(4,730)	(2,069)	(2,722)
Fresh	heads-on	27,000	25,000	24,000
"	(heads-off)	(16,981)	(15,723)	(14,286)
Unclassified	heads-on	4,548	7,106	40
"	(heads-off)	(2,924)	(4,469)	(25)

^{1/} Preliminary.^{2/} Revised.

^{3/} Caught by domestic craft, principally in waters off Central America, and shipped to the United States. Reported by the U. S. Bureau of the Census as "Products of the Americas Fisheries."

^{4/} The composition of imported shrimp was compiled from data assembled by the U. S. Bureau of the Census, U. S. Tariff Commission, and the U. S. Bureau of Commercial Fisheries Market News Service field offices. Imports by commodities listed below were converted to heads-on weight by multiplying the quantity of headless shrimp by 1.59, meat by 2.04, breaded by 1.00, canned by 3.21, dried by 7.05, and unclassified by 1.59.

Item	1963 (est.)	1962 (rev.)	1961
Shrimp			
Headless	111,717	108,628	101,208
Meat, raw	29,480	22,703	22,287
Meat, cooked	2,547	1,995	1,639
Breaded	484	421	407
Canned	4,120	2,911	2,069
Dried	279	56	167
Unclassified	3,923	4,469	25
Total	151,530	141,183	136,268

^{5/} May include some fresh products.^{6/} Not available.

in 1963 having increased 9.7 percent from the previous year and were up 24.4 percent from the 1961 imports.

Domestic shrimp landings for 1963 were the best in many years--25.7 percent more than in 1962 and up 37.7 percent from 1961. The 1963 shrimp landings at ports in the Gulf of Mexico were the largest since the collection of detailed statistical records was begun in 1956 by the U. S. Bureau of Commercial Fisheries. Louisiana's 1963 shrimp landings of slightly more than 90 million pounds (heads-on weight) were double those of the previous year, but the ex-vessel value increased only about 30 percent from 1962. But shrimp landings for the year at South Atlantic ports were the lightest in many years.

Note: See Commercial Fisheries Review, May 1963 p. 42.

Supply Indicators, March 1964:

Item and Period	1964	1963	1962	1961	1960
Total landings, So. Atl. and Gulf States:					
May	-	10,152	6,186	5,276	6,335
April	-	4,427	3,358	3,171	4,728
March	4,700	3,632	3,331	4,754	4,099
February	4,249	3,986	4,123	3,910	3,784
January	6,160	3,993	3,840	5,686	5,402
January-December	-	138,281	105,839	91,396	141,035

Quantity canned, Gulf States 1/:					
May	-	3,831	1,794	1,208	1,461
April	-	105	12	9	66
March	12	92	86	35	117
February	309	301	241	90	204
January	325	449	492	183	266
January-December	-	29,468	23,322	14,500	26,394

Frozen inventories (as of end of each mo.) 2/:					
May 31	-	24,053	13,904	24,696	17,540
April 30	-	24,954	15,637	27,492	20,502
March 31	-	27,970	16,607	31,345	23,232
February 29	35,303	28,039	19,012	37,612	29,063
January 31	43,752	28,487	21,328	37,842	34,332
January 1	45,335	31,577	19,755	40,913	37,866

Imports 3/:					
May	-	11,110	11,020	8,278	9,902
April	-	11,082	10,210	9,208	7,733
March	-	13,616	9,658	10,347	8,545
February	11,690	12,100	10,599	8,932	7,657
January	13,272	13,139	12,907	12,338	8,596
January-December	-	151,530	141,103	126,268	113,418

Ex-vessel price, all species, So. Atl. and Gulf Ports:					
May	-	80.9	83.7	52.8	62.9
April	-	83.6	82.2	55.4	60.6
March	4/57-61	85.5	80.9	56.0	56.3
February	4/57-62	85.7	78.9	53.5	51.8
January	4/57-69	85.0	76.3	52.5	49.5

Wholesale price, frozen, brown (5-lb. pkg.) Chicago, Ill.:					
May	-	100-103	96-103	67-69	74-77
April	-	100-105	94-97	69-70	74-75
March	72-75	102-106	94-95	69-71	65-68
February	73-82	102-106	93-95	69-71	65-67
January	78-83	102-106	93-94	69-71	64-66

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3.

2/Raw headless only; excludes breaded, peeled and deveined, etc.

3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.

4/Range in prices at Tampa, Fla.; Morgan City, La.; and Port Isabel and Brownsville, Tex. only.

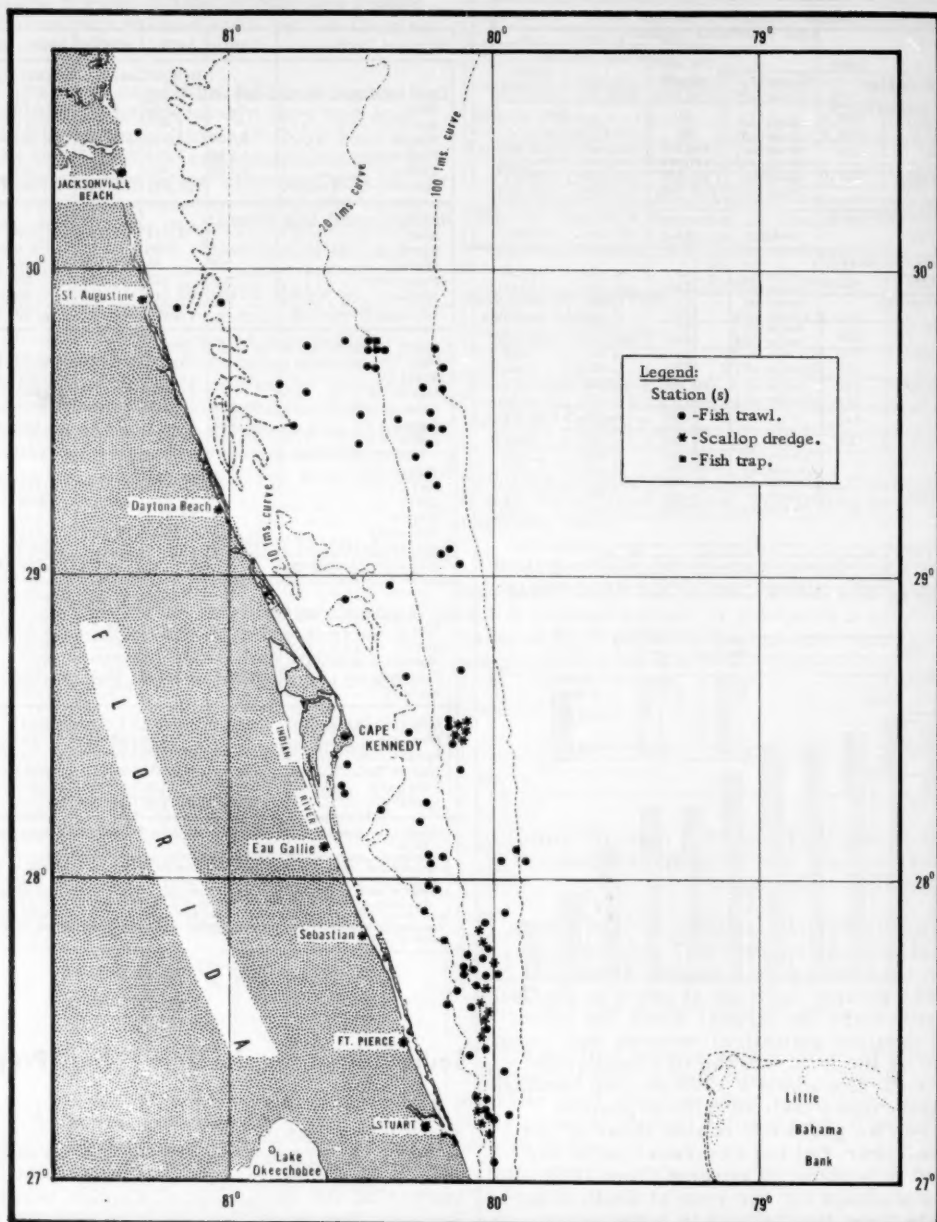
Note: March 1964 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.65.



South Atlantic Exploratory Fishery Program

TRAWLING SURVEY OFF
FLORIDA EAST COAST:

M/V "Silver Bay" Cruise 55 (February 26-March 13, 1964): To conduct a fish trawling survey off the east coast of Florida between Summer Haven and Jupiter Inlet was the primary objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay.

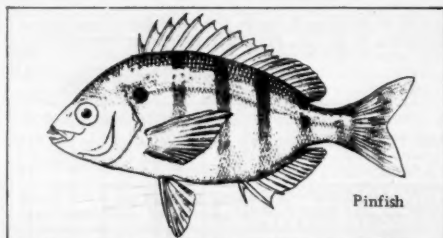


Area investigated off Florida's east coast during Cruise 55 of the M/V Silver Bay, February 26-March 13, 1964.

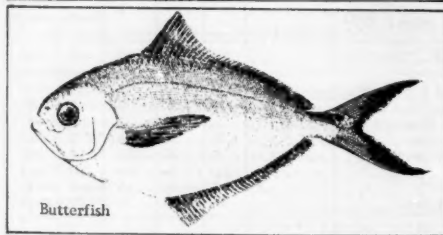
A total of 105 exploratory fishing stations was occupied in that area ranging from depths of 6 to 110 fathoms. Exploratory gear consisted primarily of 50/70 foot $4\frac{1}{2}$ -inch mesh, nylon roller-rigged fish trawls fished on 8-foot bracket doors with 15-foot leg lines. Cod ends were $1\frac{1}{2}$ -inch mesh. Trawling conditions were favorable throughout the area except at the edge of the Continental Shelf in 30 to 60 fathoms. Most catches were small with only occasional captures of commercially important species.

Only moderate numbers of sharks and rays were taken from 8 drags in depths less than 10 fathoms.

A total of 36 drags was made in the 11- to 20-fathom depth range. In those depths, moderate catches of butterfish (*Poronotus*), grunts (*Haemulon*), and pinfish (*Lagodon*) were made



Pinfish



Butterfish

near Bethel Shoals. Catches of from 750 to 1,500 pounds of small (2- to 4-count) spots (*Leiostomus*), croakers (*Micropogon*), and drums were made off Cape Kennedy. Extensive fish-school tracings were recorded on the depth-recorder off Summer Haven in 20 fathoms. Several drags in that area showed that the fish schools consisted of filefish (*Stephanolepis hispidus*). One 90-minute drag yielded 8,000 pounds of that species. On the same drag, 475 pounds of red, grey, and mutton snappers (*L. aya*, *L. griseus*, and *L. analis*), and 125 pounds of large porgies and sheepshead were also taken. That area appeared to be the southern boundary of the

extensive "broken bottom" areas previously delineated by the Silver Bay off northern Florida.

In depths greater than 21 fathoms, only occasional small catches of snappers, groupers, or other commercially-valuable fish were made. Fish-searching transects and catch results both indicated that large fish concentrations were not present in those depth ranges during the survey period.

Calico scallops (*Pecten gibbus*) were taken throughout the survey area. Samples of commercial-size scallops requested by industry were provided for machinery tests. At the time of this cruise the scallop population comprised two size groups--the 50- to 55-millimeter (2- to $2\frac{1}{4}$ -inch) mature size group, and the 35- to 45-millimeter ($1\frac{1}{2}$ - to $1\frac{3}{4}$ -inch) maturing size group. The best scallop catches (4 to 5 bushels of shell stock per 30-minute tow) were made in the following areas: 16 fathoms off New Smyrna, 26 fathoms east of Cape Kennedy, 25 fathoms southeast of Bethel Shoals, and 20 fathoms east of St. Lucie Inlet.

Night catches of rock shrimp (*Sicyonia brevirostris*) were made with the large-mesh fish trawls in several areas. Best catches were made in 20 fathoms east of St. Lucie Inlet, where up to 110 pounds of 31-36 count (heads-on) shrimp were taken per 90-minute tow. A 40-pound catch of that shrimp species was made in 14 fathoms east of Hetzel Shoal.

Note: See Commercial Fisheries Review, May 1964 p. 32.



U. S. Fishing Vessels

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JANUARY 1-MARCH 31, 1964:

From the beginning of the program in 1956 through March 31, 1964, a total of 1,384 loan applications for \$38,155,392 were received by the U. S. Bureau of Commercial Fisheries, the Agency administering the Federal Fisheries Loan Fund. Of the total, 710 applications (\$15,929,360) have been approved, 473 (\$11,729,849) have been declined or found ineligible, 160 (\$6,106,422) have been withdrawn by the applicants before being processed, and 41 (\$2,685,170) are pending. Of the applications approved, 282 were approved for amounts less than applied for. The total reduction was \$1,704,591.

The following loans were approved from January 1, 1964, through March 31, 1964:

New England Area: George F. Hume, Boothbay Harbor, Maine, \$5,000; Alfred S. Osgood, Vinalhaven, Maine, \$4,900.

California: Clark W. Washburn, Crescent City, \$6,570; Jack J. Riso, Monterey, \$11,212; and Dewey H. Vanderpool, Pinole, \$7,177.

Pacific Northwest Area: Ronald E. Bowhay, Bellingham, Wash., \$15,000; Howard V. Rawley, Ferndale, Wash., \$6,500; Charles R. Beechey, Ocean Park, Wash., \$2,500; Henry P. Wold, Quinalt, Wash., \$7,500; Andreas Arntsen, Seattle, Wash., \$28,000; Harry A. Hebert, Seattle, Wash., \$13,500; William A. Monroe, Seattle, Wash., \$3,191; Sven H. Svenson, Seattle, Wash., \$15,000; and Charles M. Thatcher, Tacoma, Wash., \$2,800.

Alaska: Ernest J. Heald, Anchorage, \$8,450; Eugene D. Smith, Coho, \$3,600; Robert B. Sandstrom, Haines, \$12,400; Charles Simon, Jr., Kasilof, \$7,850; Johnie W. Huff and Lora Mae Huff, Ketchikan, \$8,400; Oral L. Burch and Alvin R. Burch, Seward, \$6,036; and George Rohrer, Sitka, \$9,534.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the first quarter of 1964, a total of 11 applications for \$429,858 were received and 7 applications for \$282,402 were approved. Since the program began (July 5, 1960), 50 applications were received for \$4,741,309. Of the total, 33 applications were approved for \$2,588,212 and 11 applications for \$672,895 were pending as of March 31, 1964. Since the mortgage program began, applications received and approved by area are:

New England Area: Received 11 (\$1,054,500), approved 8 (\$775,365).

California Area: Received and approved 1 (\$557,000).

South Atlantic and Gulf Area: Received 28 (\$81,228,815), approved 19 (\$708,301).

Pacific Northwest Area: Received 7 (\$1,846,250), approved 4 (\$507,546).

Alaska Area: Received 3 (\$54,744), approved 1 (\$40,000).

No applications for the Fishing Vessel Construction Differential Subsidy were received from January through March 31, 1964, as the authority to accept applications expired on June 12, 1963. Since the beginning of that program on June 12, 1960, 13 applications were received for \$1,101,770, of which 7 applications were approved for \$624,370, and 6 applications for \$477,400 were pending.

DOCUMENTATIONS ISSUED AND CANCELLED:

February 1964: During February 1964, a total of 30 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 26 in February 1963. There were 36 documents cancelled for fishing vessels in February 1964 as compared with 25 in February 1963.

Table 1 - U. S. Fishing Vessels 1/- Documentations Issued and Cancelled, by Areas, February 1964 with Comparisons

Area (Home Port)	Feb.		Jan.-Feb.		Total
	1964	1963	1964	1963	1963
..... (Number)					
<u>Issued first documents 2/:</u>					
New England	1	2	2	3	23
Middle Atlantic	1	-	2	1	18
Chesapeake	-	3	5	3	66
South Atlantic	5	5	10	7	77
Gulf	20	11	37	23	239
Pacific	3	5	6	9	160
Great Lakes	-	-	1	-	5
Puerto Rico	-	-	-	-	2
Total	30	26	63	46	590
<u>Removed from documentation 3/:</u>					
New England	5	1	6	2	48
Middle Atlantic	1	6	3	10	47
Chesapeake	5	2	9	3	25
South Atlantic	6	3	10	10	53
Gulf	11	5	20	10	118
Pacific	8	8	15	15	87
Great Lakes	-	-	5	2	15
Hawaii	-	-	-	-	3
Total	36	25	68	52	396

Note: For explanation of footnotes, see table 3.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, February 1964

Gross Tonnage	Issued 2/	Cancelled 3/
	..... (Number)	
5-9	1	7
10-19	3	9
20-29	4	8
30-39	4	-
40-49	-	5
50-59	5	1
60-69	5	1
70-79	5	-
80-89	2	1
90-99	-	1
100-109	-	1
110-119	-	1
120-129	-	1
130-139	-	1
140-149	-	1
150-159	-	1

(Table continued on next page)

Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
	..... (Number)	
220-229	1	-
250-259	-	1
Total	30	36

Table 3 - U. S. Fishing Vessels--Documents Issued, by Vessel Length, February 1964

Length Feet	Issued ^{1/} Number
30-40	6
40-50	5
50-60	5
60-70	12
70-80	1
110-120	1
Total	33

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

^{2/}There were no redocumented vessels in February 1964 previously removed from records. Vessels issued first documents as fishing craft were built: 21 in 1964; 7 in 1963; 1 in 1962; and 1 prior to 1951.

^{3/}Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

* * * * *

January 1964: During January 1964, a total of 33 vessels of 5 net tons and over was issued first documents as fishing craft, as compared with 20 in January 1963. There were 32 documents cancelled for fishing vessels in January 1964 as compared with 27 in January 1963.

Table 1 - U. S. Fishing Vessels 1/-Documentation Issued and Cancelled, by Areas, January 1964 with Comparisons

Area (Home Port)	Jan.		Total 1963
	1964	1963	
... (Number) ...			
<u>Issued first documents 2/:</u>			
New England	1	1	23
Middle Atlantic	1	1	18
Chesapeake	5	-	66
South Atlantic	5	2	77
Gulf	17	12	239
Pacific	3	4	160
Great Lakes	1	-	5
Puerto Rico	-	-	2
Total	33	20	590
<u>Removed from documentation 3/:</u>			
New England	1	1	48
Middle Atlantic	2	4	47
Chesapeake	4	1	25
South Atlantic	4	7	53
Gulf	9	5	118
Pacific	7	7	87
Great Lakes	5	2	15
Hawaii	-	-	3
Total	32	27	396

Note: For explanation of footnotes, see table 3.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, January 1964

Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
	..... (Number)	
5-9	7	6
10-19	6	15

(Table continued on next column)

Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
	..... (Number)	
20-29	3	3
30-39	1	2
40-49	2	1
50-59	1	-
60-69	3	3
70-79	9	1
80-89	1	1
120-129	-	1
Total	33	32

Note: For explanation of footnotes, see table 3.

Table 3 - U. S. Fishing Vessels--Documents Issued, by Vessel Length, January 1964

Length Feet	Issued ^{1/} Number
20-30	3
30-40	10
40-50	5
50-60	2
60-70	13
Total	33

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

^{2/}Vessels issued first documents as fishing craft were built: 5 in 1964; 2 in 1963; 1 in 1961; 2 in 1960; and 4 prior to 1951.

^{3/}Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



U. S. Foreign Trade

PROCESSED EDIBLE FISHERY PRODUCTS, FEBRUARY 1964:

United States imports of processed edible fishery products in February 1964 were down 27.4 percent in quantity and 26.4 percent in value from those in the previous month. There was a sharp drop in imports of fish blocks and slabs (decline mainly in shipments from Canada) and canned sardines not in oil (decline mainly in shipments from South Africa Republic). Shipments were also down for most other processed edible fishery products, except haddock fillets.

Compared with the same month in 1963, imports in February 1964 were down 8.6 percent in quantity and 6.3 percent in value. Imports of canned sardines not in oil were much lower this February. Imports were also down for most other canned fishery products, except canned sardines in oil. The decline was partly offset by heavier arrivals of groundfish fillets, flounder fillets, sea catfish fillets, and yellow pike fillets.

U. S. Imports and Exports of Processed Edible Fishery Products, February 1964 with Comparisons

Item	Quantity				Value			
	Feb. 1964	Feb. 1963	Jan.-Feb. 1964	Jan.-Feb. 1963	Feb. 1964	Feb. 1963	Jan.-Feb. 1964	Jan.-Feb. 1963
	.. (Millions of Lbs.) ..				.. (Millions of \$) ..			
Imports ^{1/}	35.7	38.8	84.9	77.6	10.3	11.0	24.3	21.3
Exports ^{2/}	5.0	4.2	9.4	7.9	2.2	1.3	3.7	2.9

^{1/}Includes only those fishery products classified by the U. S. Bureau of the Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i. e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).

^{2/}Excludes fresh and frozen.

In the first 2 months of 1964, imports were up 9.4 percent in quantity and 14.0 percent in value from those in the same period of 1963. During January-February 1964 there were larger imports of cod filets, ocean perch filets, flounder filets, blocks and slabs, sea catfish filets, yellow pike filets, canned tuna in brine, and canned sardines in oil, but imports were down for haddock filets, halibut filets, swordfish filets, canned sardines not in oil, and canned crab meat.

Exports of processed edible fish and shellfish from the United States in February 1964 were up 13.6 percent in quantity and 46.7 percent in value from those in the previous month. An increase in exports of canned squid and the higher-priced canned salmon and canned shrimp was partly offset by a decline in shipments of canned mackerel and canned sardines.

Compared with the same month of the previous year, the exports in February 1964 were up 19.0 percent in quantity and 69.2 percent in value. Exports of canned salmon and canned mackerel were up, while shipments of canned sardines and canned squid declined.

Processed fish and shellfish exports in the first 2 months of 1964 were up 19.0 percent in quantity and 27.6 percent in value from those in the same period of 1963. In January-February 1964 there were much larger shipments of canned mackerel and shipments of canned salmon and canned shrimp were also higher, but exports of canned sardines not in oil and canned squid were down sharply.

Notes: (1) Prior to October 1963, the data shown were included in news articles on "U. S. Imports and Exports of Edible Fishery Products." Before October 1963, data showing "U. S. Imports of Edible Fishery Products" summarized both manufactured and crude products. At present, a monthly summary of U. S. imports of crude or nonprocessed fishery products is not available; therefore, only imports of manufactured or processed edible fishery products are reported. The import data are, therefore, not comparable to previous reports of "U. S. Imports of Edible Fishery Products."

The export data shown are comparable to previous data in "U. S. Exports of Edible Fishery Products." The export data in this series of articles have always been limited to manufactured or processed products.

(2) See *Commercial Fisheries Review*, May 1964 p. 35.



Washington

STEELHEAD TROUT INCIDENTAL CATCH MINIMIZED BY LARGER MESH NETS:

An experimental 8-day gill-net fishery in Grays Harbor, Wash., conducted by the Washington State Department of Fisheries during the first 2 weeks of December 1963 gave strong evidence that the use of nets with large mesh (7½ inches or larger) definitely minimizes the incidental catch of steelhead trout. During the test, a total of 359 silver salmon and 22 steelhead trout were caught.

One chartered vessel using standard (6½-inch) mesh during 3 days in early December caught 4 silvers and 11 steelhead, of which 5 were released in good condition. A group of chartered vessels taking part in the test during the second week in December used nets with mesh of 7½ inches or larger and caught 44 silvers and 8 steelhead. All 8 trout were released in good condition.

Observations during the test confirmed the belief that seals are a serious predator

on both steelhead trout and silver salmon in the Grays Harbor area. (Washington State Department of Fisheries, April 1, 1964.)

* * * * *

PURSE-SEINE VESSEL CHARTERS SOUGHT BY DEPARTMENT OF FISHERIES:

The Washington State Department of Fisheries announced on April 22, 1964, that it wished to charter three purse-seine vessels and nets for salmon tagging at the following areas: West Beach, Rosario Strait, Iceberg Point, Salmon Banks, Lime Kiln, Mitchell Bay and Stuart Island. One of the requirements in bidding for a charter was that a shipper must be familiar with at least two of the above areas and be able to demonstrate that he had been successful in fishing for silver salmon in those areas.

The charters will total a maximum of 20 fishing days per vessel and work will be done during the weekly 2- and 3-day closures of Puget Sound to commercial net fishing beginning on or about August 23, 1964. Charter will be on a per-day basis with no minimum season guarantee. Payment will be made for any day on which the net is set regardless of length of time fished. A bonus of a dollar per fish will be paid for every silver salmon tagged over a total of 160 per day.

No bids were considered that were in excess of \$300 per day for drum seines and \$350 per day for power-block seines. Such limits would not prevent payment of the bonus of one dollar for each silver salmon tagged in excess of 160 per day.

To be considered, a vessel had to be over 40 feet in length, large enough to handle two 36-inch circular fish tanks on deck, equipped with a deck pump for circulating sea water, and have adequate life-saving equipment. The fishing ability of the skipper, as well as general condition of the vessel, net, and working space were all considered in awarding the charters.

The fisherman will furnish all fishing gear, including losses, fuel, food, crew, boat insurance, and other vessel requirements. Charter will include meals for two biologists, except when in port. The net used must be in good condition and be of a standard size for areas to be fished.

One or more Washington State Department of Fisheries staff members will be aboard at all times when the net is fishing.

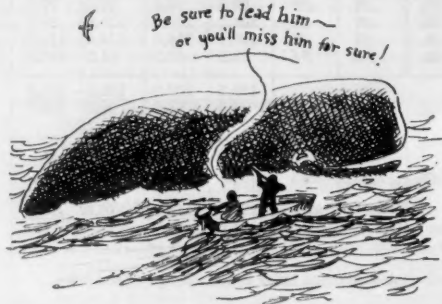
Bids were received by the Washington State Department of Fisheries until May 14, 1964.



Whales

WHALE MARKING PROJECT OFF SOUTHERN CALIFORNIA:

A three-week whale-marking cruise off southern California was begun in January 1964 by the Lynn Ann, a chartered research vessel of the U. S. Bureau of Commercial Fisheries. The project is part of an international program to conserve the world's populations of whales.



A total of 59 whale marks were fired during this cruise and 34 whales were estimated to have been effectively marked. The marked whales were 27 sperm whales, 5 gray whales, 1 fin whale, and 1 humpback whale. Twenty-six fin whales, 6 sei whales, 1 humpback whale, 46 gray whales, and about 180 sperm whales were sighted. One killer whale and 3 dolphins were collected. Gray whales were seen farther offshore than formerly observed and this raises some question in the index placed on land-based shore counts.

In marking whales, an 8-inch, hollow, stainless-steel tube with a lead cap--or whale mark--is fired from a specially designed shotgun. The tube carries instructions requesting anyone recovering the marker to return it to the National Institute of Oceanography in England.

The United States takes an active part in the work of the International Whaling Commission which resulted from a pact signed by 17 nations in Washington, D. C., on December 2, 1964. The U. S. Bureau of Com-

mercial Fisheries carries out the Federal Government's responsibilities in the conservation of whales and has a staff member serving on the Commission.



Wholesale Prices

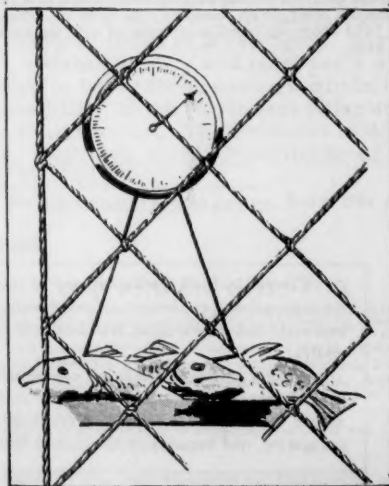
EDIBLE FISH AND SHELLFISH, APRIL 1964:

The April 1964 wholesale price index for edible fish and shellfish (fresh, frozen, and canned) dropped 1.0 percent from the previous month. With few exceptions, prices this April were generally lower for most of the fishery products listed than in March. At 103.1 percent of the 1957-59 average, the index this April was 9.2 percent lower than the same month a year earlier.

From March to April 1964, the drawn, dressed, or whole finfish subgroup index was down 2.5 percent and was lower than April 1963 by 7.7 percent. Lower prices for western frozen halibut (down 7.2 percent) at New York City were largely responsible for the decline, together with sharply lower prices for Great Lakes fresh-water fish. Although certain North Pacific halibut fishing areas were open in April, the main areas did not open until May 1. Since stocks were liberal, frozen halibut prices dropped in April. The declines were offset, to some extent, by higher April prices at Boston for ex-vessel large haddock (up 9.1 percent) and fresh and frozen king salmon (up 1.8 percent) at New York City. Compared with April 1963, prices this April were lower for all items in the subgroup except fresh large haddock (up 7.8 percent) at Boston and round fresh yellow pike (up 1.2 percent) at New York City.

The subgroup index for processed fresh fish and shellfish in April 1964 was down 0.9 percent from the previous month. Prices this April were lower than in March for fresh haddock fillets (down 3.1 percent) at Boston and fresh shrimp (down 1.6 percent) at New York City. Compared with April 1963, the subgroup index this April was down 9.9 percent mainly because of lower prices for fresh shrimp (down 13.7 percent) as well as for all other items in the subgroup.

All items listed in the subgroup for processed frozen fish and shellfish this April were priced lower than in March and the index was down 1.6 percent. The more significant price



Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1964 with Comparisons								
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			Apr. 1964	Mar. 1964	Apr. 1964	Mar. 1964	Feb. 1964	Apr. 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					103.1	104.1	109.0	113.6
<u>Fresh & Frozen Fishery Products:</u>					103.7	105.5	113.2	117.7
<u>Drawn, Dressed, or Whole Fish:</u>					98.4	100.9	120.8	106.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.08	67.4	61.8	160.2	62.5
Halibut, West., 20/30 lbs., drsd., fresh or froz.	New York	lb.	.28	.30	82.8	89.2	90.2	118.3
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.83	.82	116.3	114.2	116.0	122.3
Whitefish, L. Superior, drawn, fresh.	Chicago	lb.	.57	.73	84.3	108.2	85.8	104.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.43	.70	69.6	114.7	101.6	68.8
<u>Processed, Fresh (Fish & Shellfish):</u>					115.0	116.1	114.0	127.7
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.31	.32	75.3	77.7	140.8	76.5
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.95	.97	111.3	113.1	106.6	128.9
Oysters, shucked, standards	Norfolk	gal.	7.50	7.50	126.5	126.5	118.0	134.9
<u>Processed, Frozen (Fish & Shellfish):</u>					94.7	96.2	100.7	114.4
Fillets, Flounder, skinless, 1-lb. pkg.	Boston	lb.	.37	.39	93.8	98.9	98.9	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.37	.37	107.0	108.5	115.8	99.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.31	.33	108.7	114.0	114.0	117.5
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.73	.74	86.6	87.2	91.3	122.8
<u>Canned Fishery Products:</u>					102.5	102.2	102.0	106.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.00	21.75	95.9	94.8	94.8	105.7
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.63	11.63	103.3	103.3	103.3	104.4
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	6.13	6.13	103.9	103.9	103.9	2/100.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.09	9.21	116.5	118.2	116.5	116.2
1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.								
2/Replaced California canned sardines starting December 1962; entered wholesale price index at 100 under revised procedures of Bureau of Labor Statistics.								

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Replaced California canned sardines starting December 1962; entered wholesale price index at 100 under revised procedures of Bureau of Labor Statistics.

declines were for ocean perch fillets (down 5.3 percent) and flounder fillets (down 5.2 percent); frozen shrimp prices were down 0.7 percent from the previous month. Frozen shrimp prices this April were 29.5 percent lower than in the same month a year earlier. While prices in this subgroup were lower than in April 1963 for nearly all items, the marked price drop for frozen shrimp contributed to a larger degree than the other items toward a 17.2-percent drop in the April 1964 subgroup index as compared with the same month in 1963.



Despite reports of liberal canned pink salmon stocks, increased demand caused April 1964 prices to move up slightly (up 1.2 percent) from the previous month, but they were still 9.3 percent lower than in April 1963. That price increase was offset by somewhat lower prices for canned Maine sardines (down 1.4 percent) prior to the start of the new sardine canning season. The subgroup index for canned fishery products was down 0.3 percent from March to April and was lower by 4.0 percent as compared with April 1963.

Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that non-renewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.



FOREIGN

International

NORTHWEST PACIFIC FISHERIES COMMISSION

PROGRESS ON EIGHTH ANNUAL JAPAN-U.S.S.R. CONFERENCE:

On April 3, 1964, Japan and the Soviet Union reached agreement at Moscow on the 1964 king crab production quota for the Okhotsk Sea. As in 1963, the quota was set at 630,000 cases (48 6.5-oz. cans). The Soviet Union's share is 378,000 cases; Japan's 252,000 cases. Two seasons were established, April 15-May 25 and August 5-25. The closing date in August was shortened by five days from 1963. Area and gear restrictions are the same as last year.

Japan will again operate the four king crab factoryships Hakuyo Maru (6,372 gross tons), Yoko Maru (9,800 gross tons), Kaigo Maru (5,449 gross tons), and Seiyo Maru (6,404 gross tons). The four factoryships, each accompanied by four catcher vessels and carrying 10 Kawasaki portable launches, were scheduled to leave Hakodate April 7-8 for the Okhotsk Sea.

On April 6 Japan and the Soviet Union entered into discussions of the 1964 salmon catch quotas and regulatory measures for the salmon fishery. Items on the agenda remaining to be settled during the annual meeting were: (1) determination of a salmon catch quota for a 2-year period; (2) establishment of the 1964 catch quota; (3) intensification of regulatory enforcement in Area B; and (4) regulation of the pink and red salmon fisheries.

With regard to agenda item 1, the Soviet Union, although having agreed to discuss this matter provided that it would be limited to the catch for Area B, was taking the position that it would be impossible to determine a catch quota for a two-year period. Japan, on the other hand, wanted to open discussions on this subject.

As for agenda items 2-4, the Soviet Union was pressing for a reduction in catch quotas for red salmon in Area A (Pacific Ocean north of 45° N. latitude) and for pink salmon in Area B (Pacific Ocean south of 45° N. latitude). The Russians based their analysis on the condition of pink salmon stocks in the treaty area on the basis of 1962 resource data. They are also asserting that in Area B enforcement should be strengthened in view of the great numbers of Japanese fishing vessels taking salmon in that area. (Note: U.S.S.R. claims over 2,000 Japanese fishing vessels operating in Area B.) In addition to placing Russian observers on Japanese patrol vessels, the Soviet Union wanted to station inspectors at Japanese fishing ports to observe the unloading of salmon catches taken from Area B.

Japan, on the other hand, was said to be seeking to develop the discussions on the condition of pink salmon stocks on the basis of resource conditions that prevailed in 1963, when pink salmon runs were relatively good. On the matter of enforcement in Area B, Japan contends that the Soviet proposal not only violates the agreement concluded in 1962 between the then Minister of Agriculture and Forestry and the Soviet Fisheries Minister—that Areas A and B would be patrolled under separate systems—but would result in infringing on Japan's sovereignty over her territory. Japan was also claiming that the patrol system as applied in Area A would be difficult to adopt for Area B, since numerous small oper-

ators of 2- to 3-ton vessels predominate in that fishery. Moreover, a more rigid application of enforcement measures would run counter to national sentiment. (Suisan Keizai Shimbu April 3, 5, & 7; Suisan Tsushin, April 7, 1964.)

NORTH PACIFIC FUR SEAL CONVENTION

SOVIET UNION RATIFIES PROTOCOL AMENDING INTERIM CONVENTION:

On March 12, 1964, the Union of Soviet Socialist Republics deposited ratification of the Protocol amending the interim convention of February 7, 1957, on conservation of North Pacific fur seals. The Protocol, which was done at Washington, D. C., October 8, 1963, was not in force at the time of Soviet ratification. (Bulletin, U. S. Department of State, March 30, 1964.)

Note: See Commercial Fisheries Review, December 1963 p. 52.

INTERNATIONAL CONVENTION FOR THE NORTHWEST ATLANTIC FISHERIES

ICELAND RATIFIES PROTOCOL AMENDMENT CONCERNING HARP AND HOOD SEALS:

On March 23, 1964, Iceland deposited ratification of a Protocol to the International Convention for the Northwest Atlantic Fisheries. The Protocol (done at Washington July 15, 1963), relates to harp and hood seals and is intended to bring those species within the responsibility of the Northwest Atlantic Fisheries Commission. The Protocol is not in force. (Bulletin, U. S. Department of State, April 13, 1964.)

Note: See Commercial Fisheries Review, March 1964 p. 45.

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY 1964:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Angola, Iceland, Norway, Peru, South Africa/South-West Africa, and Chile. Although total production of fish meal in FEO countries in January 1964 was up substantially from January 1963, their exports declined in the first month of 1964. The decline was due to a drop in Peruvian shipments.

In January 1964, Peru accounted for 59.8 percent of total fish-meal exports by FEO countries, followed by Norway with

International (Contd.):

Production and Exports of Fish Meal by Member Countries of the FEO, January 1964				
Country	Production		Exports	
	January 1964	January 1963	January 1964	January 1963
	.....(1,000 Metric Tons).....			
Angola	5.6	2.6	4.8	2.9
Iceland	5.7	9.5	11.5	9.1
Norway	8.6	3.7	27.2	8.2
Peru	195.6	145.6	102.0	147.2
So. Africa (incl. S.W. Africa) ..	14.0	9.8	13.4	6.8
Chile	21.8	1/	11.8	1/
Total	251.3	171.2	170.7	174.2

1/ Data not available. Chile became a member of FEO at the end of 1963.

15.9 percent, South Africa with 7.9 percent, Chile with 6.9 percent, Iceland with 6.7 percent, and Angola with 2.8 percent. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, April 1, 1964.)

WORLD PRODUCTION, JANUARY 1964 AND JANUARY-DECEMBER 1963:

World fish meal production in January 1964 was substantially above that in the same month of the previous year. Peruvian output was up 34.2 percent, and production was up in most other producing countries, with the exception of Canada, Iceland, and the United States.

Production during January-December 1963 was similar to that in the previous year. A decline in production in the United States and Iceland was offset by greater output in Denmark, Norway, Peru, and South Africa. Peru accounted for 49.5 percent of total fish meal production in 1963, fol-

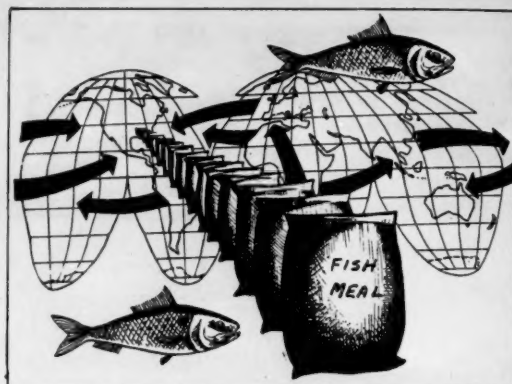
World Fish Meal Production by Countries, January 1964 and January-December 1963				
Country	January		Jan.-Dec.	
	1964	1963	1963	1962
	.....(Metric Tons).....			
Canada	3,405	7,516	77,436	79,371
Denmark	8,799	6,118	100,001	91,110
France	1,100	1,100	13,200	13,200
German Federal Rep. ..	6,757	5,975	73,997	72,442
Netherlands	1/	2/300	6,700	2/ 4,900
Spain	1/	2,085	3/17,022	25,499
Sweden	1,070	444	6,636	5,000
United Kingdom	7,736	6,443	75,290	74,184
United States	1,667	2,072	2/208,289	2/270,661
Angola	5,566	2,956	31,829	32,767
Iceland	5,736	9,476	87,730	96,147
Norway	8,607	3,659	131,546	120,924
Peru	195,551	145,659	1,159,233	1,121,096
So. Afr. (incl. SW. Afr.)	14,302	10,522	238,269	201,604
Belgium	375	375	4,500	1/
Chile	21,848	1/	90,411	1/
Morocco	1/	1/	19,000	1/
Total	282,519	204,700	2,341,089	2,208,905

1/ Data not available.

2/ Revised.

3/ Data available only for January-October.

Note: Japan does not report fish meal production to the International Association of Fish Meal Manufacturers at present. Belgium, Chile, and Morocco did not report production prior to 1963.



lowed by South Africa with 10.2 percent, and the United States with 8.9 percent.

Most of the principal countries producing fish meal submit data to the Association monthly (see table).



Australia

TUNA FISHERY TRENDS, 1963-64:

The Australian live bait and pole fishing season for bluefin tuna off New South Wales ended January 28, 1964, with a record catch of 2,915 metric tons. Long-lining and trolling for yellowfin tuna off New South Wales was continued by 12 vessels after the closure of the New South Wales bait-and-pole fishery for bluefin.

The first big run of bluefin tuna was located off Green Cape on December 3, 1963, by spotter aircraft. The use of airborne scouts contributed greatly to the good catches. The success of the New South Wales season raised the question of whether the tuna will be available in the future and whether the schools can be followed as far as Tasmania.

A catch of 1,000 tons of bluefin tuna had been taken by mid-February 1964 off the State of South Australia where the season extends later than in New South Wales. The bluefin catch target during the South Australian season is 4,000 tons. (Australian Fisheries Newsletter, March 1964.)

COMMON NAMES FOR SHRIMP:

The Australian Commonwealth-States Fisheries Conference has adopted uniform names for shrimp as follows:

Australia (Contd.):

Common Name	Scientific Name
Tiger prawn	<i>Penaeus esculentus</i>
Banana prawn	<i>Penaeus merguensis</i>
York prawn	<i>Metapenaeus eboracensis</i>
Endeavor prawn	<i>Metapenaeus endeavouri</i>
School prawn	<i>Metapenaeus macleayi</i>
Green-tail prawn	<i>Metapenaeus mastersii</i>
Rainbow prawn	<i>Parapenaeopsis sculpsilis</i>
Eastern king prawn	<i>Penaeus plebejus</i>
Western king prawn	<i>Penaeus latissulcatus</i>

In addition, the Conference has given the crab (*Portunus pelagicus*) the uniform common name of sand crab. (Australian Fisheries Newsletter, March 1964.)



Brazil

JAPANESE-BRAZILIAN JOINT WHALING ENTERPRISE TO CONTINUE OPERATIONS:

The Japanese firm which is partner to the joint Japanese-Brazilian whaling enterprise located at Cabedelo, nearby Joao Pessoa, Brazil, plans to continue its operations at that base. Reportedly, the joint enterprise showed a profit for the first time last year. Demand for whale meat in the region supplied by that firm is good. On the other hand, another Japanese fishing company is planning to terminate this year its whaling operations located at Cabo Frio, Brazil, due to a depressed local market for whale meat. (Suisan Tsushin, March 24, 1964.)



Canada

NEW BRUNSWICK FISHERIES TRENDS, 1963:

Fishing Fleet: The modernization of the New Brunswick fishing fleet continued at an accelerated rate in 1963, when 7 new steel stern trawlers and 2 large wooden trawlers were built in New Brunswick shipyards at a total cost of C\$3,450,000 (US\$320,000). Those, together with many new smaller in-shore vessels, contributed to the 15-percent increase in the annual New Brunswick catch, making 1963 a record year in total fish landings for the Province.

Tuna Industry: The New Brunswick Fishermen's Loan Board is participating in a plan to establish a commercial tuna fishery in the Province. The Board has helped provide 2 well-equipped steel purse-seine vessels on a cooperative basis for 2 groups of Campobello Island fishermen at a cost of C\$300,000 (US\$278,000) each. Both vessels were built in Bathurst, New Brunswick, under a Federal cost-sharing program. One of the vessels arrived at Campobello Island in September 1964 with about 90 metric tons of skipjack tuna, the first commercial tuna ever landed by Canadians on the eastern seaboard. It is understood that the vessels made other good catches. Most of the tuna was unloaded at Campobello and trucked to a packing plant in Eastport, Maine, for processing. Some, however, found its way to the local New Brunswick market in fresh form, although it was not well accepted by local consumers.

Shore Facilities: No important changes or significant developments in the shore-based establishments of the New Brunswick fisheries industry were apparent during 1963.

School of Fisheries: The Province's first school designed to advance the technical and scientific knowledge of Provincial fishermen was established at Caraquet, New Brunswick, in 1963. The new school offers instruction in navigation, fisheries, economics, oceanography, and the operation of electronic navigational equipment and fishing aids. The school features a three-year course; however, each year's term runs only from the first of December until the end of April. There was an initial registration of about 40 students and they ranged in age between 18 and 35 years.

Fisheries Department Established: A new Department of Fisheries was created by the Government of New Brunswick during 1963 to better meet the requirements of industry and the challenges of modern technology. Matters pertaining to the fisheries industry formerly were administered by the Fisheries Branch, operating under the Department of Industry and Development of the Provincial Government. (United States Consulate, Saint John, March 18, 1964.)

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BRITISH COLUMBIA HERRING LANDINGS AND PRODUCTS, 1963/64:

British Columbia Herring Landings and Products, 1963/64 Season with Comparisons							
Season Ending	Unit	March 28, 1964	March 10, 1963	March 10, 1962	March 18, 1961 ^{1/}	March 12, 1960 ^{1/}	March 14, 1959
Landings:							
District No. 2:							
Northern . . .	Tons	35,016	42,792	33,254	47,088	23,239	10,980
Central . . .	"	56,123	62,626	39,032	43,505	10,919	40,628
Q. C. Islands .	"	32,582	19,856	16,604	2,896	3,121	23,058
District No. 3:							
Lower East Coast	"	66,216	55,665	51,821	31,309	55,582	51,648
Middle East Coast	"	20,347	24,707	20,561	10,023	20,014	10,183
Upper East Coast	"	15,513	10,697	13,294	2,978	10,005	15,015
West Coast . . .	"	36,248	49,304	49,595	34,142	62,273	78,122
Total landings	"	262,045	265,647	224,161	171,941	185,153	229,634
Products Produced:							
Bait	"	1,128	886	575	1,619	848	1,046
Meal	"	46,778	48,035	39,535	31,014	34,492	42,307
Oil	Imp. Gals.	4,877,688	4,771,087	4,676,991	2,956,948	4,585,307	4,545,845

^{1/}Limited operations.

Canada (Contd.):

Herring landings in British Columbia during the 1963/64 season were about the same as in the previous season. Compared with the previous season, fish-meal production in 1963/64 was down 2.6 percent, but fish-oil production was up 2.2 percent.

Note: See Commercial Fisheries Review, May 1962 p. 44.



Ceylon

LOAN REQUESTED FROM JAPAN TO START TUNA FISHERY:

The Government of Ceylon has approached the Japanese Government for a loan of US\$4 million to establish a tuna fishery. Under the proposal, a tuna base with cold-storage facilities would be constructed in Ceylon and ten 150-ton tuna vessels imported from Japan.

Informed sources claim it is very likely that the Japanese Government would respond favorably to the proposal. The Japanese Fisheries Agency is planning to conduct a feasibility study as soon as further details become available. (Suisancho Nippo, April 9, 1964.)



Chile

NEW REGULATIONS ON FOREIGN WHALING PERMITS AS JAPANESE WHALERS BEGIN OPERATIONS FOR CHILEAN FIRM:

The Chilean Government issued Decree No. 811, dated December 10, 1963, concerning regulations for foreign whalers requesting permission to operated within the 200-mile marine zone claimed by Chile. Decree No. 811, published in Diario Oficial, No. 25730, January 2, 1964, grants the Chilean Ministry of Agriculture authority to issue permits to foreign whalers to hunt for a period of 3 years within the 200-mile zone claimed by Chile. Permits under Decree No. 811 are restricted to foreign vessels working under contract for a processing plant located in Chile. (Chilean Decree No. 130 of February 11, 1959, is the controlling regulation for the issuance of permits to foreign whalers seeking to operate within the 200-

mile zone and to take their catch outside of Chile.) Foreign whaling vessels receiving permits under Decree No. 811 must be constructed of steel and be under 10 years of age. After three years the foreign vessel must be either nationalized or withdrawn.

The issuance of Decree No. 811 may have been related to the contract made by a Chilean whaling company with the 2 Japanese whalers, Seiju Maru and Ryuhō Maru, to work off Chile during a period in January-May 1964. The 2 Japanese whalers received a 4-month permit to hunt off Chile under Chilean Decree No. 1078, however, that decree was designed for foreign vessels desiring to fish for anchoveta. It is understood that the 2 Japanese whalers have sought new permits under Decree No. 811.

In March 1964, a representative of the Chilean company that brought the Japanese whalers to Chile said that the Japanese equipment was excellent, their crews were experienced, and operations had been very successful. (United States Embassy, Santiago, March 18, 1964.)

Note: See Commercial Fisheries Review, June 1963 p. 68.

* * * * *

SONAR EXPERT ASSIGNED TO FISHERIES DEVELOPMENT INSTITUTE:

On March 10, 1964, the Food and Agriculture Organization (FAO) announced the assignment of a Norwegian fisheries acoustics expert to the Fisheries Development Institute of Chile for 2 years. The Institute is a project of the United Nations Special Fund, for which FAO is the executing agency. Launched in November 1963, the Institute is working to provide Chile with a permanent technological base for the rapid development of fisheries resources.

The acoustics specialist is the fifth FAO expert to be assigned to the Institute. His principal job will be to help determine, through sonar sweepings or readings, the distribution and abundance of fish stocks in Chilean waters. Plans called for him to begin sonar investigations in late May or early June 1964 of the anchoveta schools off the northern coast of Chile. In the past, Chilean fishermen have taken anchoveta only within narrow limits and always within sight of the coast. The possibility of extending the range of Chilean fishermen will be explored by the Norwegian expert. He will also train Chilean fishermen in the proper use of com-

Chile (Contd.):

plicated sonar equipment. (Food and Agriculture Organization of the United Nations, Rome, March 10, 1964.)

Note: See Commercial Fisheries Review, November 1963 p. 58.



Colombia

FISHING INDUSTRY LOSES FISHING VESSELS:

Colombia is losing the Panamanian, Costa Rican, and United States vessels which had supplied the developing fishing industry of Buenaventura, a Pacific port in northern Colombia. The vessels are leaving as a result of the National Government's recent enforcement of Colombian Decreto Numero 1409 of July 31, 1958, requiring foreign-flag vessels operating in Colombian waters to nationalize 25 percent of their ownership annually, according to an April 7, 1964, report.

Two Colombian fish-processing plants have already shut down and two others are threatening to close because of a shortage of fish and shrimp. As a result, 500 fish-plant workers are unemployed and the number may increase.

One Colombian fish-processing company has several fishing vessels under construction in the United States, but the first vessel was not to be delivered until late April 1964. Other firms have been unable to finance the purchase or construction of new fishing vessels to supplement the limited Colombian fishing fleet.



Communist China

AQUATIC PRODUCTS SOCIETY FOUNDED:

A Communist Chinese Aquatic Products Society has been established, according to "NCNA-English" Peking, December 28, 1963. The Society was said to have held its first national meeting in late 1963. Communist Chinese fishery technicians attending the meeting are reported to have claimed that encouraging results had been obtained in (1) the artificial breeding of fresh-water fish such as "big head" and carp; (2) extending edible seaweed toward the south; (3) survey-

ing fishery resources and major fishing grounds; and (4) improving fishing gear, motor vessels and junks, and processing. It was stated that Communist China has 23 research institutions and a total of 17 colleges and secondary schools which conduct aquatic studies and fisheries training. (Newsletter, February 29, 1964, National Oceanographic Data Center.)



Denmark

FISHERY EXPORTS TO THE UNITED STATES, 1963:

Danish total exports of fishery products and byproducts to the United States in 1963 dropped 10 percent in value from those in 1962, although the total quantity was about the same in both years. Larger shipments of frozen fillets were offset by a decline in the exports of frozen pond trout, frozen lobster, and canned brisling and herring. Pond trout exports declined because of more profitable prices in European markets. Lob-

Danish ^{1/} Fishery Products Exports to the United States, 1962-1963						
Product	1963			1962		
	Qty.	Value		Qty.	Value	
	Metric Tons	1,000 Kr.	US\$ 1,000	Metric Tons	1,000 Kr.	US\$ 1,000
Fresh and Frozen:						
Pond trout,	784.0	6,103	885	969.0	7,377	1,070
Other trout & salmon,	0.2	11	2	58.0	525	76
Trout eggs,	0.8	67	10	1.0	84	12
Flatfish,	130.0	726	105	226.0	1,666	242
Fillets:						
Flatfish,	141.0	539	78	23.0	119	17
Cod,	8,935.0	27,918	4,048	7,903.0	24,506	3,553
Other,	628.0	744	108	612.0	2,157	312
Lobster, Deep-water,	212.0	4,368	633	308.0	6,562	952
Other,	11.0	69	10	14.0	126	18
Processed:						
Salted,	104.0	187	27	122.0	242	35
Smoked,	0.6	20	3	1.0	34	5
Canned:						
Brisling and herring,	556.0	2,977	432	1,569.0	6,249	906
Shrimp,	175.0	1,654	240	209.0	1,717	249
Mussels,	57.0	350	51	24.0	154	22
Other,	40.0	222	32	31.0	152	22
Semipreserved:						
Caviar,	17.0	196	28	16.0	179	26
Other,	3.0	44	6	1.0	3	2/
Fish solubles, . . .	400.0	344	50	100.0	80	12
Total,	12,194.6	46,539	6,748	12,187.0	51,932	7,529
^{1/} Includes direct shipments from Greenland.						
^{2/} Less than \$1,000.						
Source: Preliminary data from Ministry of Fisheries.						
Note: One Danish kroner equals US\$0.145.						

ster exports dropped with lower market prices in 1963. Exporters of canned brisling and herring found the United States market less profitable with the Maine canned sardine pack again at normal levels. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, March 25, 1964.)

* * * * *

FISHERIES TRENDS, MARCH 1964:

Joint Nordic Fisheries Limits Considered: Representatives of the Danish, Norwegian, and Swedish Fisheries Ministries met in late March 1964 to consider the implications

Denmark (Contd.):

of the agreement on fisheries limits reached at the recent Western European Fisheries Conference in London. The officials also discussed the possibility of establishing joint Nordic fisheries limits.

Danish Fisheries Council May Dissolve: At a meeting in Copenhagen on March 18, 1964, the 10 fisheries associations represented on the Danish Fishery Council could not agree on a substantial increase in the membership fee nor on the market promotion activities to be conducted in the future. The Council, which has served as a single point of contact between the fisheries associations and Government authorities, will dissolve on April 1, 1965, unless there is a change in the view of the flatfish fillet association, the single dissenter from the majority opinion on the Council.

Danish Promotion of Fish Marketing in the United States: Marketing of Danish fish in the United States will be aided by a contribution from the Danish Ministry of Fisheries, which has decided to contribute to the Fish 'n Seafood promotion of the United States fishery organizations. The amount of the Danish contribution will be determined by taking the 3-year average of exports of frozen groundfish fillets to the United States from Denmark, including Greenland, which represents about 7 percent of the total United States imports of groundfish fillets. The Danish Ministry of Fisheries hopes that the Danish fishing industry will continue the contribution in future years.

A Danish Fish Week at the New York World's Fair this year is still in the planning stage.

The Danish Fisheries Ministry is seeking applicants for the position of Danish fisheries attache in New York City. The attache's responsibilities will include Canada as well as the United States.

Low Industrial Fish Landings Stimulate Price Increase: After a promising start in early 1964, Danish landings of industrial fish have declined. Fish meal and oil plants have increased ex-vessel industrial fish prices from \$22.36 to \$26.31 per short ton with the expectation of attracting some of the vessels which had shifted to catching food fish. At least half of Esbjerg's 500 or more cutters normally fish for industrial fish, but about 150 had shifted to fishing for plaice and other food fish.

Frozen Food Outlets May Triple: The number of stores which can sell deep-frozen foods in Denmark will be tripled after January 1, 1966, if legislation proposed by the Interior Ministry is adopted. By giving cooperatives and grocery stores the same rights to dispense deep-frozen foods as butchers and delicatessens now have, the proposed legislation would add 13,578 grocery stores and 2,312 cooperatives to the present 5,543 frozen food outlets. Sale of frozen foods also would be permitted in automatic vending machines. Frozen food packages would have to carry a date stamp and be inspected by health authorities.

Fisheries Legislation Revisions Proposed: Four proposals for legislation governing the salt-water fisheries, the eel fisheries, the fresh-water fisheries, and fisheries in two of the Danish fjords have been submitted to the Danish Parliament by the Fisheries Minister. Revisions in the salt-water fisheries legislation are designed to bring regulations into accord with modern fishery requirements and are in substantial agreement with the recommendations of a committee composed mainly of industry representatives. One new proposal would forbid certain changes which would adversely affect the fisheries. Another proposal would make it possible for the fishing industry to seek damages when other activities in fishing areas affect the industry. A three-man committee would seek a solution in those cases where the fishing industry must give way to more important industrial, agricultural, or other interests.

Early approval of the legislation is not expected because of the elections due in the fall and the unsettled question of Danish fisheries limits.

Fishery Cooperatives Enjoy Good Year: Danish fishery cooperatives had a good year in 1963 with total sales of Kr. 130 million (US\$18.8 million), or 10 percent more than in 1962. There are 34 cooperatives with about 1,800 members. The local marketing cooperatives accounted for Kr. 50 million (\$7.2 million) of the total; the 2 fish reduction plants for Kr. 63 million (\$8.1 million) and the national association of fish marketing cooperatives, Dansk Andelsfisk, for Kr. 17 million (\$2.5 million). The cooperatives handle about 20-25 percent of the Danish fisheries catch, including about 15 percent of the food fish and about 35 percent of the industrial fish landings. Dansk Andelsfisk has just announced plans for the construction of a freezer and warehouse in Copenhagen to be completed in the spring of 1965. It will pack and freeze fillets from local plants as well as some shipped in from the filleting operation on the island of Bornholm. The cooperative association ships substantial quantities of fish blocks to the United States. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, March 25, 1964.)

Note: Danish kroner 6.904 equals US\$1.00.



Greece

FISHERY LANDINGS, 1962-1963:

Greek fishery landings in 1963 were up 17.3 percent from those in previous year, due mainly to heavier landings by near- and middle-water trawlers and purse seiners. Total Greek landings were valued at DR.979 million

Greek Fishery Landings by Fishing Areas, 1962-1963		
Fishing Area	1963	1962
	... (Metric Tons) ...	
Atlantic	18,600	17,000
Mediterranean	9,200	10,000
Middle and near-water (trawlers and purse seiners)	60,000	48,000
Inshore	9,400	8,000
Lagoons and lakes	6,000	5,000
Total landings	103,200	88,000

(US\$32.6 million) in 1963 and Dr.869 million (\$29.0 million) in 1962. (Alieia, January 1964.)

Notes: (1) Greek drachmas 30.0 equal US\$1.00.

(2) See Commercial Fisheries Review, April 1963 p. 52.



Guatemala

SHRIMP CATCH, 1962-1963:

The Guatemalan Ministry of Agriculture has reported that in 1963 a total of 1,990,149 pounds of shrimp were landed in Guatemala by a fishing fleet of 30 vessels, compared with shrimp landings of 2,207,203 pounds by a fleet of 49 vessels in 1962. (United States Embassy, Guatemala, March 20, 1964.)



Iceland

FISHERY EXPORTS TO THE SOVIET BLOC, 1963:

Iceland's trade with the Soviet Bloc has declined about 50 percent from the peak levels of the late 1950's. The Bloc's share of total Icelandic exports was 17.3 percent in 1963; 18.5 percent in 1962; 14.2 percent in 1961; 23.1 percent in 1960; and 33.7 percent in 1959. Fishery products accounted for about 96.3 percent of the value of Icelandic shipments to the Bloc in 1963.

Frozen and salted herring and frozen fish fillets made up the bulk of Icelandic exports to the Bloc. In 1963, the Bloc bought 67 percent of Iceland's frozen herring exports and 34 percent of Iceland's salted herring exports.

Icelandic Fishery Exports to the Soviet Bloc, 1963			
Country of Destination and Commodity	Quantity	F.O.B. Value	
		IKr. 1,000	US\$1,000
Czechoslovakia:	Metric Tons		
Frozen herring	3,218.9	19,582	456
Frozen fish fillets	1,139.4	19,176	446
Canned or preserved fish	108.4	3,235	76
Cod-liver oil	500.0	4,887	114
Herring meal	2,884.8	16,422	382
Herring oil	206.1	1,141	27
Total	8,056.7	64,443	1,501
East Germany:			
Frozen herring	3,790.2	24,358	567
Other frozen fish	102.2	964	22
Salted herring	1,863.5	17,015	396
Total	5,755.9	42,337	985
Bulgaria:			
Cod-liver oil	190.0	1,529	36
Hungary:			
Frozen fish fillets	75.0	1,311	31
Canned or preserved fish	0.5	40	1
Fish meal	520.1	3,285	76
Total	595.6	4,636	108
Poland:			
Frozen herring	1,500.0	8,940	208
Cod-liver oil	370.0	3,706	86
Salted herring	3,000.0	26,253	611
Herring meal	5,643.0	35,156	819
Total	10,513.0	74,055	1,724
Rumania:			
Frozen herring	3,952.3	23,616	550
Salted herring	2,592.6	20,355	474
Cod-liver oil	155.0	1,140	26
Total	6,699.9	45,111	1,050
U.S.S.R.:			
Frozen herring	12,003.8	63,439	1,477
Frozen fish fillets	15,411.5	248,622	5,789
Salted herring	16,622.7	125,088	2,912
Canned and preserved fish	146.0	6,764	157
Total	44,184.0	443,913	10,335
Grand total	759,951.0	676,024	15,739

Note: Icelandic kronur 42.95 equals US\$1.00.

The Soviet Union was Iceland's most important trade partner in the Bloc, followed by

Poland and Czechoslovakia. No marked change in trade between Iceland and the Soviet Union is expected in the near future since the current trade protocol between the two countries will remain in effect until December 19, 1965. Some of the other trade partners in the Bloc can expect a continual trade decline with Iceland.

Note: See Commercial Fisheries Review, July 1963 p. 76.

UTILIZATION OF FISHERY LANDINGS:

How Utilized	January-October	
	1963	1962
	... (Metric Tons) ...	
Herring^{1/} for:		
Canning	296	335
Oil and meal	267,338	330,953
Freezing	26,342	18,194
Salting	71,240	55,515
Fresh on ice	5,617	7,718
Groundfish^{2/} for:		
Fresh on ice	29,663	25,970
Freezing and filleting	155,955	151,932
Salting	69,662	85,922
Stockfish (dried unsalted)	68,530	41,668
Canning	35	-
Home consumption	12,221	11,006
Oil and meal	3,186	3,327
Capelin for:		
Freezing	188	-
Oil and meal	889	-
Shrimp for:		
Freezing	399	263
Canning	113	86
Lobsters for:		
Fresh on ice	2	-
Freezing	4,872	2,335
Total production	716,548	735,224
1/Whole fish.	2/Drawn fish.	

Species	January-September	
	1963	1962
	... (Metric Tons) ...	
Herring^{1/} for:		
Oil and meal	264,388	330,953
Freezing	22,285	18,194
Salting	70,012	55,515
Fresh on ice	5,617	7,718
Canning	296	335
Groundfish^{2/} for:		
Fresh on ice	24,796	19,998
Freezing and filleting	147,604	143,906
Salting	69,109	85,108
Stockfish (dried unsalted)	67,685	40,474
Canning	35	-
Home consumption	11,167	10,040
Oil and meal	2,977	3,139
Capelin for:		
Freezing	188	-
Oil and meal	889	-
Shrimp for:		
Freezing	267	263
Canning	82	86
Lobsters for:		
Fresh on ice	2	-
Freezing	4,804	2,314
Total production	692,203	718,043
1/Whole fish.	2/Drawn fish.	

Iceland (Contd.):

FISHERY LANDINGS BY
PRINCIPAL SPECIES:

Species	January-October	
	1963	1962
	... (Metric Tons) ...	
Cod	218,655	212,017
Haddock	42,470	42,196
Saithe	13,117	11,958
Ling	5,035	6,291
Wolffish (catfish)	16,952	13,166
Cusk	5,179	4,446
Ocean perch	29,911	19,187
Halibut	1,025	1,348
Herring	370,832	412,715
Shrimp	512	349
Capelin	1,077	-
Lobster	4,874	2,335
Other	6,909	9,216
Total	716,548	735,224

Note: Except for herring which are landed round, all fish are drawn weight.

* * * * *

Species	January-September	
	1963	1962
	... (Metric Tons) ...	
Cod	214,701	207,149
Haddock	38,738	36,205
Saithe	11,946	10,887
Ling	4,804	5,947
Wolffish (catfish)	12,839	12,838
Cusk	5,013	4,201
Ocean perch	28,059	16,015
Halibut	914	1,216
Herring	362,597	412,715
Shrimp	349	349
Capelin	1,077	-
Other	11,166	10,521
Total	692,203	718,043

Note: Except for herring which are landed round, all fish are drawn weight.



Israel

FISHERIES DEVELOPMENT:

An Israeli fishing company wishes to buy, with Israeli governmental assistance, a trawler valued at 2.5 million francs (US\$510,000) which will be able to process and carry 150 metric tons of fish. The company has operated in the Red Sea and intends to expand its activity in that area.

Israeli fish production amounts to about 16,300 tons per year. Fish consumption has been estimated at 6.75 kilos (14.9 pounds) per person per year and officials in the industry hope it will reach 8 kilos (17.6 pounds) per person

per year as in most Mediterranean countries. The Israeli Fisheries Department would like per capita consumption to reach 10 kilos (22.0 pounds) a year. That would require an annual production of 25,000 tons. To fulfill such a quota, 5,000 tons of salt-water fish would be needed. The remainder could be satisfied by fresh-water fish.

In late 1963, the Israeli fishing fleet included a tuna vessel which was fishing in the Indian Ocean, 2 large trawlers and 3 other fishing vessels operating in the Red Sea off Massauah, 14 trawlers fishing in the Mediterranean Sea and 2 trawlers fishing in the Atlantic, as well as a few hundred smaller vessels fishing in the Mediterranean Sea and Aqaba Gulf.

Israeli Red Sea trawlers, in cooperation with Ethiopia, have launched a research program which has enabled them to explore the Red Sea coast stretching between Assab and Massauah. (*La Pêche Maritime*, September 1963.)



Japan

FROZEN TUNA EXPORTS:

1963: Japanese exports of frozen tuna to the United States and Canada in 1963 calendar year totaled 82,692 short tons and to other countries (mainly European and African countries) 60,186 metric tons, according to data released by the Japan Frozen Foods Exporters Association. (*Suisan Tsushin*, March 18, 1964.)

Table 1 - Japanese Exports of Frozen Tuna to United States and Canada, Calendar Years 1962-1963

Product	1963	1962
	. . (Short Tons) . .	
From Japan Proper:		
Albacore 1/.	15,655	22,594
Skipjack 1/.	69	326
Yellowfin 2/.	23,419	40,930
Big-eyed 2/.	31	398
Bluefin	-	23
Loin 3/.	6,238	5,143
Subtotal	45,412	69,414
Transshipments:		
Albacore 1/.	23,127	20,049
Skipjack 1/.	3,693	1,081
Yellowfin 2/.	9,800	15,655
Big-eyed 2/.	285	1,327
Bluefin 2/.	374	483
Subtotal	37,279	38,595
Total	82,691	108,009

1/ Round fish.
2/ Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.
3/ Includes mixture of albacore, yellowfin, big-eyed, and bluefin loins.

1/ Round fish.

2/ Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.

3/ Includes mixture of albacore, yellowfin, big-eyed, and bluefin loins.

Japan (Contd.):

Table 2 - Japanese Exports of Frozen Tuna to Countries Other Than the United States and Canada, Calendar Years 1962-1963

Product	1963	1962
.. (Metric Tons) ..		
Albacore 1/.....	7,292	5,549
Yellowfin 2/.....	31,603	27,411
Big-eyed 2/.....	11,305	9,750
Skipjack 1/.....	1,735	332
Bluefin 2/.....	8,251	3,373
Loins 3/.....	-	5
Total	60,186	46,420

1/ Round fish.

2/ Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.

3/ Yellowfin tuna.

Fiscal Year 1963: Japanese exports of frozen tuna to the United States and Canada in fiscal year 1963 (April 1963-March 1964) were down 15.8 percent from those in fiscal year 1962 (April 1962-March 1963), according to data compiled by Japan's Frozen Foods Exporters Association. Direct shipments from Japan accounted for 36 percent and transshipments 44 percent of the total. Most of the decline was in exports of yellow-

Table 1 - Japanese Exports of Frozen Tuna to United States and Canada, Fiscal Years 1963/1964 and 1962/1963

Product	Fiscal Year 1963			FY 1962 Total
	Direct Shipment	Transship- ment	Total	
	..... (Short Tons)			
Albacore 1/.....	16,810	21,988	38,797	36,913
Skipjack 1/.....	12	3,719	3,731	2,452
Yellowfin 2/.....	23,081	10,206	33,287	51,036
Big-eyed 2/.....	11	149	160	1,370
Bluefin 2/.....	-	272	272	509
Loins 3/.....	5,996	-	5,996	5,370
Total	45,910	36,334	82,243	97,650

1/ Round fish.

2/ Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.

3/ Includes mixture of albacore, yellowfin, big-eyed, and bluefin loins.

Table 2 - Japanese Exports of Frozen Tuna to Other Countries, Fiscal Years 1963/1964 and 1962/1963

Product	Italy	Fiscal Year 1963			Total
		Yugo- slavia	Czecho- slovakia	Other Countries	
	.....(Metric Tons).....				
Albacore 1/..	1,110	1,436	-	1,873	4,419
Skipjack 1/..	105	347	220	1,060	1,732
Yellowfin 2/..	26,822	5,400	83	1,461	33,766
Big-eyed 2/..	6,667	1,865	1,314	1,799	11,645
Bluefin 2/..	4,871	1,837	190	888	7,786
Loins	-	-	-	12	12
Tot. FY 1963	39,575	10,885	1,807	7,093	59,360
Tot. FY 1962	33,049	10,288	997	6,411	50,745

1/Round fish.
2/Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.

1/ Round fish.

2/ Includes actual weight of gilled-and-gutted, dressed (with tail), and filleted tuna.

fin (gilled-and-gutted, dressed, and filets) which were down 34.8 percent or nearly 18,000 tons below fiscal year 1962. Exports of big-eyed tuna were down sharply and those for bluefin were down to about half the exports of the earlier fiscal year. Exports of round albacore were up 5.0 percent from the previous fiscal year, skipjack was up 52.5 percent, and there was some increase in exports of loins of various tuna species.

Japan's frozen tuna exports to other countries in fiscal year 1963 were up 17.0 percent from the previous year. Exports to Italy were 19.7 percent more than in 1962 with yellowfin accounting for nearly 70 percent of the frozen tuna exports to that country. Exports to Czechoslovakia were nearly double those of the previous year and there was some increase in exports to Yugoslavia and other countries. (Suisan Tsushin, April 8, 1964.)

CANNED TUNA IN OIL EXPORTS:

Japanese exports of canned tuna in oil for April 1963-February 1964 totaled 1,794,500 cases. Principal countries of destination were: West Germany--659,260 cases; Canada--205,200; Great Britain--148,350; Switzerland--114,860; Lebanon--88,910; Aden--88,250; Belgium--83,160; Netherlands--82,040; Saudi Arabia--61,700; Okinawa--53,050; Kuwait 42,900; Australia--30,230 or 33,230 cases (due to misprint, it is not possible to determine which is the correct figure); and Italy--24,270 cases. (Suisancho Nippo, March 23, 1964.)

The export market for Japanese canned tuna in oil continues to be very slow this year ever since the price per case (7-oz. 48's) declined by US\$0.30 in January 1964. The current Japanese export price per case (c.i.f.) of Indian Ocean bluefin tuna is reported to be US\$7.10. On the other hand, the Japanese domestic market price for that pack continued to hold steady at about the 2,330 yen (\$6.47) level. Consequently, Japanese exporting firms are not handling that product at the present time.

The ex-vessel price in Japan for frozen Indian Ocean bluefin (dressed) is presently 80 yen per kilogram (US\$202 a short ton). Japanese packers claim that at that price they cannot make any profit, but they are packing a small quantity of that species so as to keep their plants in operation. They also have in stock over 100,000 cases of bluefin tuna in oil. Unless that stock is moved, there will be little likelihood for improvement in the export market situation. (Suisan Tsushin, March 25, 1964.)

Japan (Contd.):

**CANNED TUNA IN BRINE EXPORTS
TO U. S., 1958-1963:**

Japanese canned tuna in brine exports to the United States increased steadily during 1958-1963, according to data compiled by the Japanese Fisheries Agency. During that 6-year period, the Japanese supplied 80-90 percent of United States total imports of canned tuna in brine. However, due to a decline in United States domestic production of canned tuna in calendar year 1963, the quantity of tuna canned in brine which can be imported into the United States during the calendar year 1964 at the 12.5-percent rate of duty is expected to total about 2,850,000 standard cases, about 5 percent less than 1963's 3,006,221 cases (48 7-oz. cans). This de-

Japanese Canned Tuna in Brine Exports to the United States, 1958-1963		
Year	Standard Cases ^{1/}	Percentage of Total U. S. Imports
1963	2,301,600	84.4
1962	2,244,000	83.5
1961	2,217,000	79.9
1960	2,030,000	83.3
1959	2,122,000	80.6
1958	1,926,000	89.0
^{1/} 48 7-oz. cans.		

velopment in turn is expected to affect 1964 Japanese canned tuna exports to the United States. They are expected to decline below 1963 exports, which totaled 2,301,600 cases, valued at US\$35,206,000. (Suisan Keizai Shimbun, March 18, 1964.)

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**CANNED FISH EXPORT TARGET,
FISCAL YEAR 1964:**

The Agriculture and Fisheries Products Export Committee, Japanese Ministry of International Trade and Ministry, at a meeting on March 25, 1964, tentatively set the

Japanese Canned Fish Export Target for FY 1964 with Comparisons				
Commodity ^{1/}	FY 1964 Target		FY 1963 Target	
	Qty.	Value	Qty.	Value
	1,000 Cases	US\$ 1,000	1,000 Cases	US\$ 1,000
Tuna	4,445	37,513	4,250	34,912
Salmon	1,395	43,962	1,710	51,124
Crab	438	11,004	440	11,077
Sardine	100	780	500	3,625
Saury	1,650	10,680	1,370	7,773
Mackerel	600	3,948	562	3,398
Total	8,628	107,887	8,832	111,909

^{1/}Commodities listed as "shellfish and others" not included.

fiscal year 1964 (April 1964-March 25, 1965) export target for canned agricultural and fishery products at 17.3 million cases, valued at US\$161 million. The export target for canned fishery products (not including shellfish) totaled 8,628,000 cases, valued at US\$107,887,000.

To achieve the export target, the Export Committee drafted the following recommendations:

1. In order to ensure supply of raw material for tuna packers, the Government should: (a) exercise a greater degree of administrative leadership to facilitate collective bargaining between producers and packers; (b) provide a greater degree of leadership to encourage and promote delivery of raw material to packers; and (c) investigate fishery resources to ensure availability of raw material for canning purposes.

2. Add to the list of war reparations payable in kind to the Philippines, Burma, and Indonesia canned sardine, saury, mackerel, squid, and salmon (particularly pink salmon).

3. Establish measures authorizing extension of government loans to the canned foods joint sales companies under the same conditions applicable to canned foods exporters. This should be done promptly since the export income exemption system is to be abolished.

4. Devise measures to prohibit exports of commodities on which substantially higher duties would be imposed through application of the EEC common tariff.

5. Increase government subsidy for expenses necessary to conduct sales promotion in foreign countries.

6. Extend the sugar rebate system to all export commodities, simplify rebate procedures, and liberalize sale of sugar with over 98 percent sugar content.

7. Negotiate with the United States for reduction of U. S. tariff on tuna packed in oil, from the present ad valorem rate of 35 percent to the 12.5-percent rate applied to imports of tuna packed in brine; on canned crab, from the present 22.5 percent to 11.25 percent; and on canned clam, down to 10 percent.

8. Negotiate with the United States for removal of U. S. restrictions on imports of canned tuna in brine.

9. Promote exports of commodities suitable for export to foreign countries.

10. Reduce can prices.

11. Develop measures whereby countries in southeast Asia (particularly Indonesia) and United Arab League countries will increase their canned sardine, saury, and mackerel import quotas.

12. Take steps to forestall the enactment of import bans or restrictions by foreign countries presently buying Japanese canned fishery products.

13. Establish favorable public transportation fees (such as railway and harbor cartage fees) for export canned food products, and provide special arrangements for the utilization of railway freight cars during the packing season. (Nihon Suisan Shimbun, March 27, 1964.)

* * * * *

CANNED SALMON SOLD TO AUSTRALIA:

The Japan Canned Salmon Sales Company contracted to deliver in June 1964, a total of 44,000 cases of second-grade red salmon halves (Japanese can size--No. 2 flat 48 cans per case) to two Australian trading firms. This sale cleared the stock of second-grade red salmon held by the sales company. As of

Japan (Contd.):

early April the company still had a very limited quantity of second-grade pink salmon on hand. (Suisancho Nippo, April 7, 1964.)

EXPORTERS ADOPT TUNA PROGRAM FOR FISCAL YEAR 1964:

The Japan Frozen Foods Exporters Association, at a special general meeting on March 19, 1964, approved the following export quotas for overseas bases for fiscal year 1964 (April 1964-March 1965): American Samoa--25,000 short tons; Espiritu Santo, New Hebrides--6,000 tons; Noumea, New Caledonia--7,500 tons; Levuka, Fiji Islands--9,000 tons; Penang, Malaysia--6,000 tons; Saint Martin, Netherlands Antilles--2,000 tons; total 55,500 short tons.

The overseas bases export quotas are to be distributed to Association members in proportion to their previous year's export performance record. However, for bases (newly established) without export performance records, the export quotas are to be allotted on the basis of the sales contracts concluded between exporting firms and the joint companies which operate the bases. In this case, 10 percent of the allotted quota is to be turned over to the Association, which will be pooled (referred to as adjustment quota), and distributed to Association members with actual performance records on a first-come first-served basis.

The Association also agreed on an assessment of 30 yen (US\$0.083) a short ton for fresh tuna landed in overseas bases. The assessment on frozen tuna is 90 yen (\$0.25) a short ton, as before.

In addition, the Association agreed on a special assessment of 30 yen (\$0.083) a metric ton for the purpose of raising 1,770,000 yen (\$4,917) to be used for the promotion of tuna sales in Europe and Africa. Of this amount, 1.5 million yen (\$4,167) would be used exclusively for tuna promotion in Italy. This amount represents the Association's contribution to the joint Italian-Japanese tuna promotion effort, which had been proposed by the Italian tuna industry.

Earlier, at a meeting on March 2, the Association had agreed on contributing a total of six million yen (\$16,667) for the joint pro-

motion program. Of that sum, the Japanese Government was to be requested to contribute half, and Japanese producers and exporters one-fourth each. (Suisancho Nippo, March 23; Suisan Tsushin, March 4 and 21, 1964.)

SUMMER ALBACORE TUNA LANDED AT YAIZU:

The first large landing of summer albacore was made at Yaizu, Japan, on April 2, 1964--120 metric tons were landed on that day. Japanese tuna packers paid as much as 125 yen a kilogram (US\$315 a short ton) for the fish. (Suisan Keizai Shimbun, April 4, 1964.)

JAPAN FROZEN TUNA SALES COMPANY REDUCES LEVY:

At a meeting in Tokyo on March 30, 1964, the Japan Frozen Tuna Sales Company agreed to reduce the levy on frozen tuna consigned to the company by two-tenths of one percent--from three-tenths to one-tenth of one percent. The Sales Company has been under strong criticism from certain producers who insisted that the management of that company should be rationalized. (Nihon Suisan Shimbun, April 1, 1964.)

REGULATIONS FOR OVERSEAS TUNA BASES REVISED:

The Japanese Fisheries Agency on March 31, 1964, issued a directive revising the existing regulation governing overseas tuna base operators. Effective April 1, the directive allows the landing of frozen tuna at overseas bases--heretofore only fresh (iced) tuna was permitted to be landed at overseas bases.

The Agency also reduced the 27,000-ton tuna quota for American Samoa by 2,000 tons, and applied that amount as the quota for the newly established tuna base at St. Martin, Netherlands Antilles. The landing quotas for all other bases (Penang, Fiji Islands, Noumea, and Espiritu Santo) remain the same. (Nihon Suisan Shimbun, April 3, 1964.)

POOR FISHING REPORTED BY VESSEL FISHING BOTTOMFISH IN GULF OF GUINEA:

The Koyo Maru (314 gross tons), which has been operating in the Gulf of Guinea (Atlantic

Japan (Contd.):

Ocean) since late January 1964, reports poor fishing. That vessel, which had been dispatched to the Gulf for the purpose of exploring grounds not suited for trawling, is scheduled to remain on the fishing grounds for one year. Fishing with different types of line gear, the Koyo Maru on good days caught as much as 3.5 metric tons of bottomfish a day, but is also said to have experienced many days of poor fishing. (Suisan Tsushin, March 24, 1964.)

WHALE OIL EXPORT TARGETS:

The Japanese Ministry of International Trade and Industry, at a meeting on March 18, 1964, adopted the following whale oil export targets for fiscal year 1964 (April 1964-March 1965): baleen whale oil--99,400 metric tons (value US\$20,742,000); sperm whale oil--118,000 metric tons (value \$24,535,000). (Suisancho Nippo, March 21, 1964.)

NEW OFFSHORE TUNA FISHERY:

As of March 23, the Japanese Fisheries Agency had received over 2,000 applications to engage in the newly-designated offshore tuna fishery (north of 10° N. latitude and west of 160° E. longitude) in the North Pacific. The fishery is to be restricted to a total of 1,850 tuna vessels in the 20- to 50-ton range. Deadline for filing applications was March 24. (Suisan Keizai Shimbun, March 24, 1964.)

GOOD SKIPJACK TUNA FISHING NEAR MARIANAS:

Japanese tuna vessels operating out of Japan found excellent skipjack fishing near the Mariana Islands in early March. The area, which was discovered last year, is centered at 11° N. latitude-135° E. longitude, about 720 kilometers southwest of Guam, and was yielding large fish of about 6.5 pounds. (Nihon Suisan Shimbun, March 18, 1964.)

OVERSEAS TUNA BASE OPERATORS URGED BY GOVERNMENT TO ORGANIZE:

Overseas tuna base operators in American Samoa, Fiji Islands, Espiritu Santo (New Hebrides Is.), Penang (Malaysia), and Noumea (New Caledonia) are being encouraged by the Japanese fisheries Agency to organize a liaison council so that problems of mutual interest, such as ex-vessel price, export, wage

and labor problems, and the decline in hook rate in nearby fishing grounds, can be fully aired. The Agency feels that the time has now come for all the overseas tuna base operators to get together to fully explore those problems, which are common to all the bases. The Agency also feels that, despite the existence of a sellers' market, the overseas base operators were not in position to favorably negotiate sales contracts or fish-quality inspection arrangements with either the exporters or United States tuna packers. As a result, they need to organize to improve their status. (Nihon Suisan Shimbun, April 3, 1964.)

PORTABLE-BOAT TUNA MOTHERSHIP FISHERY:

The portable-boat-carrying tuna mothership fleet in Japan consists of 44 motherships carrying piggyback a total of 120 portable boats (each 20 tons in size).

The Japanese Portable-Boat-Carrying Tuna Mothership Conference submitted a proposal to the Fisheries Agency requesting that not only mothership-to-mothership transfer of catches be authorized but that portable-boat-carrying tuna motherships be also authorized to transfer or receive fish from regular distant-water tuna vessels. The Agency is reported to be opposed to this plan. According to the Agency, the objective of the proposal is to make it possible for the portable-boat-carrying motherships to fish with 300-ton distant water tuna vessels, which would serve as catcher vessels to the motherships. This will then result in completely changing the existing structure of the portable-boat-carrying tuna mothership fishery. Furthermore, the Agency holds that the intensification of fishing effort at the present time is not desirable from a resource standpoint. (Suisancho Nippo, March 17, 1964.)

TUNA MOTHERSHIPS SAIL FOR TAHITI AND FIJI:

The Japanese tuna mothership Nojima Maru (8,800 gross tons), accompanied by 65 catcher vessels, was scheduled to depart Kobe, Japan, on May 10, 1964. The firm which operates that fleet has notified the Japanese Fisheries Agency of its intention to operate the mothership in Tahitian waters this year.

The tuna mothership Yuyo Maru (5,040 gross tons), accompanied by 55 catcher vessels and two carrier vessels, was scheduled

Japan (Contd.):

to depart Tokyo on May 20 for the tuna fishing grounds off the Fiji Islands. (Suisancho Nippo, April 8, 1964.)

TUNA MOTHERSHIP OPERATIONS IN SOUTH PACIFIC:

A large Japanese fishing company, which recently submitted an application to the Japanese Fisheries Agency to operate two tuna mothership fleets in the South Pacific Ocean this year (one in the summer and the other in the fall) is having a difficult time signing up sufficient tuna fishing vessels to organize the fall fishing expedition. That company may cancel its plans for the fall operation, according to speculation.

The firm's tuna mothership Yuyo Maru (5,040 gross tons) is scheduled for the summer operation. She was scheduled to depart Japan on May 20, 1964, accompanied by a fleet of 55 fishing and support vessels. (Suisan Tsushin, March 23, 1964.)

Editor Note: Although Japanese Government regulations permit tuna-fishing vessels up to 240 tons gross to participate in the tuna mothership-type fishery, most of the catcher vessels participating in that fishery are vessels under 100 tons gross. Owners of this class of vessels are reported to be very reluctant about operating their vessels in the South Pacific this year, due to the steady decline in catch rate per hook in that area, which was quite low in 1963.

FISHERIES CENSUS, 1963:

The Japanese Ministry of Agriculture and Forestry on April 1, 1964 released preliminary data from its third national fisheries census. Started on November 1, 1963, the census includes data as of March 23, 1964.

The census showed that:

1. Fisheries enterprises (families or organizations which operated fishing vessels over 30 days during the year) totaled 234,000 in 1963 as against 252,000 in 1953, a decline of 7 percent in 10 years. Decline was widespread throughout Japan. Only the prefectures of Iwate, Miyagi, Aichi, Mie, Ehime, Fukuoka, and Kumamoto showed gains.

The national trend, by regions, was as follows: (a) Hokkaido Region--decline of 16 percent, mainly due to failure of herring fishery. (b) Northern Pacific Coast Region--Aomori, Fukushima, and Ibaraki prefectures showed a decline. Iwate and Miyagi showed an increase as a result of expansion in laver cultivation. (c) Central Pacific Coast Region--Tokyo showed a decline of 24 percent; Chiba, Kanagawa, and Shizuoka showed decreases. Aichi and Mie showed a 30-percent increase. Aichi's increase was in laver cultivation; Mie's in-

crease in pearl cultivation. Tokyo's and Chiba's decline was mainly attributed to abandonment of laver cultivation fields due to industrial expansion in the Tokyo Bay region. (d) South Pacific Coast Region--Ehime and Kochi showed a sharp gain, Oita no gain, and other prefectures in the region showed a decline ranging from 10-20 percent. Sharp rises in Ehime and Kochi were due to increases in laver and pearl cultivation. (e) Northern Japan Sea Region--All prefectures, except Akita, registered a decline of 20-30 percent, due to the stagnant condition of the set-net fishery, coastal trawl fishery, and hook-and-line fishery. Akita showed a drastic decline of over 50 percent due mainly to the land reclamation program at Hachirogata Lagoon. (f) Western Japan Sea Region--All prefectures showed declines, particularly Tottori. Decline was attributed to stagnant condition of trawl fishery, hook-and-line fishery, and the land reclamation project at Nakauri. (g) East China Sea Region--Laver cultivation in the Ariake Sea showed a great increase. Fukuoka and Kumamoto (which border this sea) registered increases of 30 and 50 percent, respectively. (h) Inland Sea Region--All prefectures bordering the Inland Sea showed a decline of 20-30 percent. Decline was attributed in great part to abandonment of fishing grounds due to industrial development.

2. Families engaged in fishing for others. Families which did not operate their own fishing vessels in 1963 but which fished at sea for others for a period of 30 days or more during that year totaled approximately 171,000 as compared to 240,000 in 1953, a decline of 29 percent. The decline was particularly great for the prefectures bordering the Japan Sea and the Inland Sea. The prefectures of Iwate, Miyagi, Fukushima, and Kanagawa showed increases of 20-30 percent. They are attributed to increases in enterprises requiring the employment of a great number of fishermen (such as at the large fishing ports at Miyako, Shiohama, and Misaki), and to the employment of larger fishing vessels and changes in production base resulting from expansion of port facilities.

3. Motorized vessels. Motorized vessels owned by fishing enterprises (families or organizations which operated fishing vessels over 30 days during the year) totaled approximately 146,000 (as of survey date) as compared to 111,000 in 1963--an increase of 31 percent. By vessel size, the number of motorized vessels under five gross tons totaled 37,000, an increase of 40 percent. Of fishing vessels over 200 gross tons, there was a fourfold increase in numbers of vessels between 200-500 tons, and a tenfold increase in vessels over 500 tons.

People engaged in fisheries (those over 15 years of age). The number of people engaged in fisheries in 1963 totaled 490,000, as compared to 607,000 in 1953, a decline of 23 percent. The prefectures of Iwate, Mie, and Fukuoka each showed increases of about 10 percent, but all other prefectures, particularly those bordering the Japan Sea and the Inland Sea, showed a decline. (Nihon Suisan Shimbun, April 3, 1964.)

COMPENSATION FOR LOSS OF FISHING GEAR AND CATCH BEING STUDIED:

The Japanese Fisheries Agency is negotiating with the Ministry of Finance to revise a section of the existing fisheries legislation on vessel loss compensation so that vessel owners who dump their catch, gear, and fuel overboard to lighten their vessels, so as to prevent loss or damage to their vessels when they run aground, will be compensated for such losses. The Agency hoped to have the revision become effective from April 1, 1964, but as of early April, the matter of special premium rates had not been fully resolved.

Through a directive issued October 1963 by the Director of the Japanese Fisheries

Japan (Contd.):

Agency, vessel owners are now being compensated for loss of gear which they have been compelled to abandon on the high seas as a result of being pursued by foreign patrol vessels. This directive is to be incorporated within the proposed revision. Only vessels covered under a special agreement will be eligible for compensation. (Nihon Suisan Shimbun, April 3, 1964.)

VESSEL CONSTRUCTION:

Loan Program Trends: Due to inadequate funds in the Government-operated Development Bank, the Japanese Ministry of Agriculture and Forestry (MAF) is planning on limiting the programs it hopes to have financed by the Bank. For fiscal year 1964 (April 1964-March 1965), the MAF is actively encouraging the Development Bank to make available loans for the construction of large distant-water trawlers. However, the Bank feels that it will be difficult to accommodate all demands placed on the limited funds available for loan purposes, unless adjustments are made. Accordingly, the Fisheries Agency (MAF) plans to review existing conditions, possibly establishing a priority system for those seeking loans for the construction of distant-water trawlers. (Suisan Keizai Shimbun, March 20, 1964.)

Permits Issued March 30, 1964: On March 30, 1964, the Japanese Fisheries Agency issued permits for the construction of 57 fishing vessels: 25 wooden vessels totaling 771 gross tons and 32 steel vessels totaling 4,323 gross tons. Included are permits for 2 small wooden salmon vessels under 39 tons gross, 8 steel 96-ton salmon vessels, 4 steel tuna vessels (one 99-ton, one 192-ton, and two 253-ton vessels), and 5 steel distant-water trawlers (one 92-ton, two 299-ton, and two 314-ton vessels). (Suisan Keizai Shimbun, April 1, 1964.)

FISHERIES MISSION SCHEDULED TO VISIT UNITED STATES AND CANADA:

An official of the Japan Fisheries Association reports that his Association plans to sponsor a fisheries mission to the United States and Canada in July 1964.

The mission will consist of 15 members of the Japan Fisheries Association and its affiliated organizations, according to the Association's plans. The mission's tentative plans call for departure from Tokyo July 1, and return to Tokyo on July 28, 1964. Itinerary includes visits to the major fishery areas and fishing ports in Alaska, calls at Vancouver, B. C., and to fisheries centers in the State of Washington.

The official stated that the Japan Fisheries Association is aware of the intense concern that fisheries problems between the United States and Japan have aroused in the American fishing industry during the past several years, and that the purpose of the trip is to promote good will and understanding between the fishing industries of Canada, Japan, and the United States.

The Japanese mission will, for the first time, have an opportunity to gain better understanding of fisheries management and conservation practices conducted in Alaska as well as observe fishing operations. It is planned that members of the mission will brief the United States and Canadian authorities on the state of Japan's northern seas fisheries. In that connection, the Association official said that there will be no exchange of views on the revision of the North Pacific Fisheries Convention scheduled for discussion at Ottawa in 1964. (United States Embassy, Tokyo, March 30, 1964.)

FISH MEAL OPERATIONS IN BERING SEA:

The Japanese oil-meal factoryship Tenyo Maru (11,581 gross tons), accompanied by 28 trawlers, departed Yokohama for the eastern Bering Sea on April 8, 1964. The fish-meal factoryships Gyokuei Maru (10,357 gross tons) and Hoyo Maru (former Renshin Maru of 14,094 gross tons) were scheduled to depart for the eastern Bering Sea from Hakodate on April 10 and 15, respectively. Each factoryship was accompanied by 30 trawlers. (Suisan Tsushin, April 8, 1964.)

FISHERIES ASSOCIATION CONTRIBUTES MONEY TO ALASKA EARTHQUAKE VICTIMS:

A check for \$5,000, contributed by the Japan Fisheries Association to the victims of the Alaska earthquake, was presented to the

Japan (Contd.):

U. S. Deputy Chief of Mission, United States Embassy, Tokyo, on April 7, 1964. In making the presentation, the President of the Association, accompanied by other officials of that organization, read the following message:

"We have heard that the great earthquake which hit the Alaska district on March 28 dealt great damage to the area, and that the damage sustained by fisheries facilities was especially severe. We feel deep sympathy, and we, Japanese fisheries enterprisers, mainly those engaged in northern seas fisheries, have hereby decided to present \$5,000 in token of our deep sympathy.

"The amount, we are afraid, is very small, but we hope that it may perhaps serve as a primer. We wish to convey our heartfelt prayer that the victims of the earthquake will achieve reconstruction quickly."

The U. S. Deputy Chief of Mission acknowledged the contribution and in reply described the action of the Japan Fisheries Association as an example of the cooperation and sympathetic understanding which exists between our two countries.

The check, which was made out to the United States Ambassador to Japan, has been endorsed for payment to the Treasurer of the State of Alaska. (United States Embassy, Tokyo, April 13, 1964.)

FISH SAUSAGE PRODUCTION:

The Japan Fish Sausage Association stated that fish sausage production for fiscal year 1963 (April 1963-March 1964) was expected to show an increase of over 10 percent, and was estimated to total 125,000 metric tons. In fiscal year 1962 the production was 114,120 metric tons. (*Suisancho Nippo*, April 6, 1964.)



Korea

TUNA FISHING VESSEL LAUNCHED:

A 145-ton tuna vessel was launched on April 14, 1964, at Pusan, Korea. The vessel is 1 of 3 tuna vessels being constructed by a Pusan shipyard for a Korean company under

a loan from a United States firm. The vessel is scheduled to operate in the Southwest Pacific and land tuna at American Samoa. The other two vessels are expected to be completed in June 1964 and dispatched to the Southwest Pacific.

In addition to their construction program, the Koreans are importing fishing vessels in order to increase their fisheries catch. (United States Embassy, Seoul, April 20, 1964.)



Mexico

ENSENADA FISHING INDUSTRY:

The port of Ensenada in Baja California is one of Mexico's most important fisheries centers. The greater part of the canned fish produced in Mexico originates in Ensenada, as do virtually all of Mexico's abalone and spiny lobster exports.

Canning: Ensenada's greatest importance as a fishing port stems from its canneries. Three active canneries are located in Ensenada and one is in the suburb of El Sauzal.

The three canneries in Ensenada pack sardines and mackerel. As none of them are located directly on the waterfront, the fish must be trucked from vessel to plant. Fishing vessels lie in the harbor and unload directly into amphibious landing craft which churn their way across the harbor, emerge on a gently sloping sandy beach, and proceed to the canneries over city streets. The fish are cut and packed by hand.

The cannery at nearby El Sauzal is the largest fish canning enterprise in Mexico with an annual production of about 500,000 cases. Sardine, mackerel, and tuna are packed at the mechanized El Sauzal cannery which has fish-cleaning and filleting machines. This integrated plant also operates: (1) a tomato cannery, primarily for the tomato sauce used in sardine canning; (2) a reduction plant for the manufacture of fish meal, oil, and solubles from cannery offal; and (3) a quality control laboratory. In the spring of 1964, the El Sauzal cannery began building a can-making factory as a joint venture with the United States firm, which now supplies most of the cans used by the Mexican plant.

The El Sauzal harbor is too shallow for most fishing vessels, so the company has ob-

Mexico (Contd.):

tained space at the general cargo dock in Ensenada where it has moored a barge equipped with suction pumps that can unload two vessels at a time. Belt conveyors carry the fish from the barge to trucks which haul the fish five miles to El Sauzal.

Currently the entire fish pack at Ensenada and El Sauzal is sold on the domestic Mexican market. The demand for canned fish is growing rapidly in Mexico and all four plants operate to capacity when fish are available.

Sardines are packed principally in 1-pound oval cans with tomato sauce or mustard, and in 8-ounce round cans in brine.

Pacific mackerel and jack mackerel are packed in a variety of ways. They are put up in 1-pound tall cans and sold as "mackerel, salmon-style." Small fish are packed in 1-pound ovals with tomato sauce as "sardines." Some of the larger fish are filleted and packed in oval cans as "sardine fillets."

Yellowfin, bluefin, albacore, and shipjack tuna are packed in half-pound round cans, as in the United States, and sold as atun (tuna).

Bonito and yellowtail are packed tuna-style and labeled either "economia atun" or "bonito."

Lobsters, Clams, and Abalone: Ensenada is an exporting center for the products of the fisheries for spiny lobster, abalone, and Pismo clam that are located in the villages along the coast to the south.

The spiny lobster fishery is conducted mainly by the "cooperativas" or cooperative groups of fishermen operating out of several villages as far south as Turtle Bay. In order to maintain an orderly marketing procedure, the Mexican National Bank for the Development of Cooperatives buys most of the spiny lobster production of the several fishing cooperatives. The bank contracts with a firm in Ensenada to cook, sort, freeze, and ship the lobsters, most of which are exported to the United States under contract with a buyer in California. The catch of the fishing camps close to Ensenada are brought to the central processing plant by truck. Those from the outlying camps come to Ensenada on vessels supplied with circulating sea water to keep the spiny lobsters alive. The first carrier vessel planned specifically for hauling spiny lobsters has been ordered by the Cooperative

at Mazatlan. Although designed for the lobster fishery, the vessel will be able to operate in other fisheries during the closed season.

The 1963/1964 spiny lobster fishing season (October 1-March 15) in Baja California yielded a catch of 840 metric tons (live weight) as compared with 750 tons in the previous season, according to the Mexican Department of Fisheries.

Pismo clams are dug by the members of fishery cooperatives along the beaches near San Quintin. Most of their production is shucked and shipped as clam meats to a canner in California.

Recognizing the large clam resource on the miles of beaches between San Quintin and Abreojos, Mexican interests are attempting to interest United States chowder canners in a large-scale harvest of pismo clams using modern clam dredges.

The abalone fishery was started many years ago by Japanese divers. Originally the abalone meat was dried for export to the Orient. Now all diving in the Mexican abalone fishery is done by members of the Mexican fishermen's cooperatives. Abalone canneries are located at Turtle Bay and Cedros Island, the most important centers of the fishery. Cooperatives in Ensenada and El Rosario also contribute to the catch. Canned abalone, in 1-pound tall cans, is the principal product, although the production of frozen abalone slices is becoming important.

Although domestic sales of canned abalone are increasing, most of the output is exported. In 1962, exports of canned abalone (mainly to the United States) totaled 6,784,000 pounds, valued at US\$2.3 million. In 1962, exports of frozen sliced abalone (almost entirely to the United States), reached 390,000 pounds with a value of \$342,000.

Kelp and Agar Agar: Giant kelp is abundant along the Baja California coast from the United States border to several hundred miles south. Considerable quantities are harvested in the Ensenada area and exported without processing to San Diego. The buyer uses the "sargaso" to augment its own harvest of the same species from California waters for the manufacture of alginates for use in a great variety of products. About 23,300 short tons (wet weight) of giant kelp were exported in 1962, according to the Mexican Department of Fisheries.

Mexico (Contd.):

Another seaweed, gelidium, is gathered at Ensenada and the fishing camps down the coast. It is dried at the camps and exported for use in the manufacture of agar-agar. A total of 756,000 pounds (dried weight) of gelidium was shipped in 1962, according to the Mexican Department of Fisheries.

Fishing Fleet: Fishing and the harvest of seaweed are a major factor in the economy of Ensenada. They are particularly important to the sparse population of the villages to the south.

According to the Ensenada office of the Mexican Department of Fisheries, the cooperatives in the coastal area served by Ensenada include 1,650 active fishermen. An additional 700 crew members are employed by the purse seiners and smaller vessels fishing for sardines, mackerel, and tuna. The canneries in Ensenada and El Sauzal employ about 800 workers.

Although catches are seasonal, one aspect or another of the fisheries provides some employment throughout the year. The proximity to Southern California results in relatively high wages and high prices for fish.

The Ensenada fishing vessels include small craft which fish for the local fresh market, a fleet of small to medium purse seiners, and a fleet of 10 large purse seiners. Practically the entire fleet originated in California. Some vessels were bought outright by Mexican fishermen or canneries. Others came to Ensenada under United States ownership and with United States crews to fish for the canneries. Gradually the United States crews were replaced by Mexican fishermen and the boats passed into Mexican ownership. It is reported that the entire fleet is now locally-owned.

The high seas fleet of 10 modern purse seiners fish for the cannery at El Sauzal. The vessels range in capacity from 100 to 300 tons. Six of those vessels are sardine and mackerel seiners capable of fishing several hundred miles to the south and returning their catches under brine refrigeration. The cannery, is therefore, not dependent on seasonal runs in local waters. The other four large purse seiners are tuna vessels that range as far as South America, and are equipped with modern electronic aids to fish-

ing, nylon nets, and power blocks for net hauling.

Fisheries College: Ensenada is also the location of a fisheries college. Known as the "Escuela Superior de Ciencias Marinas," it is part of the Autonomous University of Baja California. Under the direction of a former scientist of the Mexican Department of Fisheries, the fisheries college has a faculty of 11 and a student body of about 50. The college offers a four year course leading to the degree of "Oceanologo" or oceanologist (the term covers both physical and biological oceanography). Because the college is new, it now has students in the first two classes only.

In addition to the marine college, the university also operates a preparatory school in Ensenada at the high school level. Because classes are conducted in the late afternoon and evening, both the college and the preparatory school can draw on the talent of the local industrial community.

Students graduated by the fisheries college will help relieve Mexico's shortage of marine scientists. (United States Embassy, Mexico, April 27, 1964.)

Note: See Commercial Fisheries Review, December 1963 p. 73; June 1963 p. 83.

SHRIMP VESSELS TO FISH FOR FRENCH GUIANA:

Some 14 shrimp vessels accompanied by a small freezer ship, which left the port of Mazatlan to fish in French Guiana, are reported to have reached Trinidad and may already be operating off South America. The vessels are said to be fishing for the same San Diego, Calif., importer who handled their shrimp catches in Mexico. About 6 other Mazatlan shrimp vessels are awaiting government approval to depart and several vessels at Salina Cruz have so far failed to receive authority to leave.

Although the vessel operators anticipate better catches and increased profits in the newly-developed fishery off French Guiana, Mexican fishing industry sources indicate that the increasing friction between boat owners and the crews who belong to fishermen's cooperatives hastened the move to new shrimp grounds. (Fisheries Attache, United States Embassy, Mexico, April 10, 1964.)

Mexico (Contd.):

MANNING SHRIMP VESSELS WITH FISHERMEN NOT MEMBERS OF COOPERATIVES:

Another development in the disagreement between shrimp boat owners and fishermen's cooperatives is being watched with great interest by the entire industry as well as by labor organizations. Some months ago a boat owner in Salina Cruz found what appeared to be a way to man his boats with fishermen who are not members of cooperatives, thus avoiding the necessity of making contract agreements. Although the law reserves shrimp fishing to members of cooperatives, one clause permits "free fishing." After a great deal of effort the Salina Cruz boat owner succeeded in obtaining official permission for nonmember crews. Fourteen vessels are reported to have started "free fishing" on March 30, 1964. If the "free fishing" effort succeeds, it may revolutionize all the fisheries now reserved to cooperatives or result in the passage of tighter laws to protect the cooperatives. (Fisheries Attache, United States Embassy, Mexico, April 10, 1964.)

**Netherlands****EXPERIMENTAL OFFSHORE FISHING TO CONTINUE:**

Experimental distant-water fishing by 8 Dutch trawlers outside their customary fishing grounds in the North Sea will be continued, according to a statement on March 19, 1964, by the Dutch Minister of Agriculture and Fisheries before the Permanent Committee on Fisheries of the Second Chamber of the Netherlands Parliament. He said that, so far, the experiment had not been a paying proposition, but owners of the fishing vessels involved desired its continuation and expansion. The Government will continue to subsidize the experiment, for which fl 1 million (US\$278,000) annually has been made available for a period of 3 years. The number of vessels involved in the experimental distant-water fishing project may be increased to 10 trawlers. (United States Embassy, The Hague, April 12, 1964.)

**Norway****FISHERIES TRENDS:**

March-April 1964: HERRING: A total of 296,000 metric tons of winter herring were landed by Norwegian fishermen during the season which ended March 25, 1964. That was the best result since 1960 and a good re-



Homeward bound loaded with herring.

covery from the depressed levels of 1963. Almost half of the 1964 winter herring catch was made in waters off the Lofoten Islands, which were previously noted for their large cod fishery.

COD: Despite the unusually good weather, this year's Lofoten cod fishery has been disappointing, yielding a catch of only 37,816 tons as of March 28, 1964, as compared with 47,975 tons by the same date in 1963, and 61,661 tons in 1962.

WHALING: At the end of the 1963/64 season, the 4 Norwegian Antarctic whaling expeditions had produced 251,230 barrels of whale and sperm oil. This was 26,585 barrels more than the same expeditions produced in 1962/63. In that season, however, the whale factoryship Sir James Clark Ross was put out of commission on January 27, 1963, and failed to resume operations.

FISHING VESSEL CONSTRUCTION FOR GHANA AND MOROCCO: The first of seven 231-foot stern trawlers, to be built for the Ghana Fishing Corporation by Norwegian Shipyards, was launched in early 1964. A comprehensive training program for the Ghanaian crews that will man the vessels has been planned by the Norwegian Development Assistance, in cooperation with private firms.

Norway (Contd.):

A Norwegian shipyard near Molde has obtained a contract to build twenty 63-foot fishing vessels for a Moroccan company within a 20-months period. The total price for the vessels, electronic equipment, engines, and gear will be about Kr. 10.8 million (US\$1.5 million). All equipment will be delivered by Norwegian companies. (News of Norway, April 16, 1964.)

Note: Norwegian kroner 7.17 equal US\$1.00.

Late March 1964: HERRING: A total of 291,725 metric tons of winter herring had been landed by Norwegian fishermen as of March 24, 1964. That was the best result

since 1960 when the herring catch by the same date amounted to 322,734 tons. A total of 85.1 percent of the 1964 winter herring catch was processed into meal and oil, as against 53.6 percent in 1960.

COD: There was some improvement in the Lofoten cod fishery in late March 1964, but fishermen in that area had landed only 12,441 tons as of March 25, 1964, at least 5,000 tons less than the Lofoten cod catch by the same date in 1963. (News of Norway, April 2, 1964.)

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CANNED FISH EXPORTS, 1962-1963:

Norwegian exports of canned fishery products in 1963 were down 8.9 percent in quan-

Table 1 - Norwegian Exports of Canned Fishery Products by Type, 1962-1963

Product	January-December 1963			January-December 1962		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kroner	US\$1,000	Metric Tons	1,000 Kroner	US\$1,000
Smoked brisling in oil	4,793	32,785	4,579	5,480	36,821	5,150
Smoked brisling in tomato . .	575	3,175	443	808	4,635	648
Smoked small sild in oil . . .	11,478	48,482	6,771	12,185	52,300	7,315
Smoked small sild in tomato .	1,447	5,234	731	1,157	4,102	574
Unsmoked small sild in oil . .	869	2,812	393	782	2,589	362
Unsmoked small sild in tomato	61	225	31	117	442	62
Kipperd herring	3,149	13,442	1,877	4,242	18,362	2,568
Unsmoked herring in tomato .	-	-	-	110	270	38
Mackerel	666	3,117	435	685	3,219	450
Roe, unclassified	1,412	5,132	717	1,232	4,476	625
Soft herring roe	719	3,545	495	797	3,413	477
Fish balls	581	1,517	212	572	1,515	212
Other canned fish	162	1,212	169	129	946	132
Shellfish	1,545	16,486	2,303	1,839	19,681	2,753
Total	27,457	137,164	19,156	30,135	152,771	21,366

Table 2 - Norwegian Exports of Canned Fishery Products^{1/} by Country of Destination, 1962-1963

Country of Destination	January-December 1963			January-December 1962		
	Quantity	Value		Quantity	Value	
	Metric Tons	1,000 Kroner	US\$1,000	Metric Tons	1,000 Kroner	US\$1,000
Finland	185	1,187	166	143	881	123
Sweden	396	2,036	284	421	1,984	277
Belgium-Luxembourg	649	3,124	436	682	3,229	452
Ireland	295	1,087	152	314	1,137	159
France	278	1,151	161	398	1,616	226
Netherlands	219	893	125	195	844	118
United Kingdom	4,859	21,608	3,018	5,412	24,802	3,469
West Germany	782	3,012	421	673	2,654	371
East Germany	1,479	5,295	739	1,478	5,072	709
South Africa Republic	212	981	137	1,112	4,647	650
Iraq	1,233	5,126	716	102	384	54
Canada	922	5,527	772	1,192	6,920	968
United States	11,900	61,597	8,603	13,234	68,765	9,617
Australia	1,947	7,150	999	1,746	1,106	994
New Zealand	503	2,144	299	251	1,022	143
Other Countries	2,186	7,797	1,089	1,875	6,831	955
Total ^{2/}	28,045	129,715	18,117	29,228	137,894	19,285

^{1/}Does not include exports of canned shellfish.

^{2/}Totals are slightly larger than the combined exports of canned fish (excluding shellfish) shown in table 1.

Note: In 1962, Norwegian kroner 7.15 equaled US\$1.00; in 1963, Norwegian kroner 7.16 equaled US\$1.00.

Norway (Contd.):

tity and 10.3 percent in value from those in 1962. Norway's leading fishery exports--smoked brisling in oil, smoked small sild in oil, and kippered herring--were all affected by the decline.

The United States was Norway's most important market for canned fishery products, accounting for 42.4 percent of total shipments in 1963 and 45.3 percent in 1962.

Note: See Commercial Fisheries Review, July 1963 p. 88.

SHIPYARD BUILDING FOUR
PURSE SEINERS FOR CHILE:

A Norwegian shipyard is building four 120-gross-ton oceangoing purse seiners for Chile. One of the vessels was to be delivered in May 1964, another in June, and the other two later in the summer. The specifications of each vessel are reported to be: 101 feet 6 inches in length, 24 feet wide, and 13 feet in depth.

No information is available on the prices and payment arrangements for the vessels but it is believed that part of the payment is being financed through a Norwegian Government guaranteed export credit loan at 6-percent interest. (United States Embassy, Oslo, April 7, 1964.)



Peru

FISH-MEAL INDUSTRY
TRENDS, EARLY 1964:

The financial difficulties of the Peruvian fish-meal producers are now receiving Government attention. The Peruvian Chamber of Deputies announced on March 13, 1964, the formation of a special committee to study the industry's problems. Special attention will be given to the advisability of tax relief and to possible changes in the established marketing system. The National Fisheries Society is preparing a proposal to the Government for taxation based upon profits as an alternative to the present tax based on output.

The financial squeeze in the Peruvian fish-meal industry is based on excess capacity, coupled with the poor equity base of many producers. Those problems are now being compounded by the disappointing fish-meal

yield per ton of anchoveta. While the Peruvian fisheries catch in January 1964 hit an all-time high of more than one million metric tons, only slim profits were reported in the fish-meal industry. Eight small plants were reported to have closed down.

Tax relief could be a significant short-term boost for hard-pressed producers, but the eventual elimination of the inefficient, poorly capitalized plants may be inevitable. However, the financial problems of individual producers are not likely to significantly affect overall production for the year. Well-run, soundly capitalized plants are still operating profitably, and the longer term prospects for the industry are considered bright enough to keep output up through the present period of financial stringency. Also, private investment capital from foreign countries continues to move into the industry. (United States Embassy, Lima, March 26, 1964.)

FISH MEAL EXPORTS BY COUNTRY OF
DESTINATION, JANUARY-SEPTEMBER 1963:

The United States was the leading market for Peruvian fish meal during January-Sep-

Peruvian Fish Meal Exports by Country of Destination, January-September 1963	
Country of Destination	Quantity Metric Tons
United States:	
East Coast	131,177
West Coast	54,118
Hawaii	500
Total United States	185,795
Other Countries:	
Germany, West	152,922
Germany, Eastern	35,618
Austria	3,570
Australia	2,442
Belgium	20,625
Colombia	2,465
Czechoslovakia	7,493
Spain	53,945
Philippines	3,235
France	34,409
The Netherlands	139,680
Hungary	16,598
Great Britain	36,936
Ireland	5,935
Italy	46,811
Japan	58,161
Mexico	18,609
Poland	9,750
Sweden	12,375
Venezuela	4,950
Yugoslavia	21,638
Other ^{1/}	7,123
Total other countries	695,290
Grand total	881,085
^{1/} Includes shipments to Bulgaria, Greece, Brazil, Canada, Malaysia, Rumania, Bolivia, Formosa and Honduras.	
Source: Peruvian National Fisheries Society.	

Peru (Contd.):

tember 1963. During that period, Peruvian fish meal exports to the United States consisted of 131,177 metric tons shipped to east coast ports, 54,118 tons shipped to west coast ports, and 500 tons shipped to Hawaii. (United States Embassy, Lima, April 16, 1964.)



Philippine Republic

PURCHASE OF SOUTH AFRICAN SARDINES APPROVED:

On April 13, 1964, the President of the Philippine Republic approved the purchase of South African canned sardines by the National Marketing Corporation (NAMARCO). Contracts have been signed for 875,000 cases at a cost of 6.5 million pesos (US\$1,662,400). The first shipment of 200,000 cases is scheduled to arrive in May 1964. (United States Embassy, Manila, April 17, 1964.)

Note: Philippine pesos 3.91 equal US\$1.00.



Poland

FISHERIES GOALS, 1964:

Landings: The Polish fishing industry is committed to land 223,000 metric tons of salt-water fish in 1964. The state-owned fisheries are to increase their catch to about 184,000 tons in 1964; cooperative fisheries are to land 23,000 tons in 1964; and private fisheries are to land over 16,000 tons.

By area, the 1964 plan calls for a Baltic Sea catch of 91,000 tons; an Atlantic catch of 47,000 tons (as against 32,000 tons in 1963); and a North Sea catch of 85,000 tons. In accordance with plans to intensify fishing effort in the Atlantic, the mothership Kaszuby will be sent to the northwest Atlantic for the first time in 1964. The vessel will be accompanied by a fleet of 15 trawlers which will fish for herring off Nova Scotia and on Georges Bank. Plans also call for greater fishing effort off Iceland and in the Irish Sea.

It is expected that the 1964 catch will include about 76,000 tons of North Sea herring, 22,000 tons of Baltic Sea herring, 64,000 tons of cod, 14,000 tons of sprats, 13,000 tons of

mackerel, 12,300 tons of ocean perch, 4,700 tons of flatfish, 530 tons of eels, and 275 tons of salmon and trout.

Fishing Fleet: The increased landing goals in 1964 reflect the expansion of the Polish fishing fleet. Under current construction timetables, new vessels to be delivered to the state-owned fisheries in 1964 will include 3 "B-15-type" factory-trawlers, 1 "B-18-type" large freezer-trawler, and 6 "B-23-type" freezer-trawlers, as well as seven 2½-meter cutters. When working out the catch goals, it was assumed that the annual landings of a factory-trawler would average 4,500 tons and those of a "B-23" freezer-trawler would average 1,700 tons.

The cooperative fisheries expect to receive 6 new 17-meter cutters in 1964. The state-owned fisheries will also deliver several used 17-meter cutters to the cooperative fisheries.

Processing: Facilities for processing of the state-owned fisheries have also been called on to increase output. Their production goals in 1964 include 7,380 tons of fish fillets, 16,245 tons of preserved fish, 5,400 tons of pickled fish, 14,890 tons of cured fish, 2,520 tons of semicooked fish products, 7,660 tons of fish meal, and 1,750 tons of fish oils. The fish-processing industry is expected to supply the Polish market with 131,000 tons of fishery products in 1964 (excluding industrial products) as compared with 126,000 tons in 1963.

Considerable investment in the shore facilities of the Polish fish-processing industry is planned in 1964. Cold-storage facilities are to be constructed at Gdynia, Hel, and Władysławowo. The expansion effort in the Polish fishing industry will require sizable investments to mechanize handling, transportation, and preliminary processing at the fishing centers.

Overseas Bases: Because of excellent catches of mackerel and sardines off the Scilly Islands, a landings base for Polish vessels was arranged in Ostend, Belgium, in January 1964. Fish discharged there were frozen and then carried to Poland by refrigerated vessels. (Polish Maritime News, No. 65 and No. 66.)

A news article in the New York Journal of Commerce, March 30, 1964, reported that Poland was seeking permission to set up cold-storage facilities at the Welch port of Milford

Poland (Contd.):

Haven in the United Kingdom. This was said to be associated with the increased Polish fishing effort in the Atlantic. The article stated in part, "... Polish state fisheries representatives in Britain hint that they may meet some difficulty in setting up the Milford facility--though there is no suggestion of this from British Government sources or the port authorities, who say the agreement is still under negotiation.

"Last season the Poles in fact had a temporary seasonal fish transshipment arrangement on the British North Sea Coast... But a more permanent arrangement, with a 500-ton freezer warehouse, is apparently sought this time.

"The in-and-out arrangement, under which Polish trawlers, paying normal port landing dues, would merely land fish into store for fairly rapid removal to Poland by refrigerator vessels, seems not to present any commercial difficulties. But deep-sea fishing has lately become a sensitive area between several Communist and Western countries."

Note: See Commercial Fisheries Review, March 1964 p. 66, February 1964 p. 80, and February 1963 p. 86.

FISHERIES TRENDS, 1963:

Landings: Polish landings of salt-water fish amounted to 209,745 metric tons in 1963 as compared with 164,039 tons in 1962 and 169,135 tons in 1961. The Polish catch in 1963 included record landings of 91,000 tons from the Baltic Sea, as well as 85,000 tons

Table 1 - Polish Landings of Salt-Water Fish, 1963^{1/}

Species	Total	State-Owned Fisheries	Cooperatives	Private Fishermen
..... (Metric Tons)				
Salmon . . .	331.3	7.3	244.0	80.0
Eel	154.5	6.8	19.4	128.3
Baltic herring	28,151.0	17,717.0	7,150.5	3,283.5
North Sea herring . . .	73,275.8	73,275.8	-	-
Sprat	10,732.2	7,173.8	1,315.7	2,242.7
Cod	57,475.9	39,005.5	10,878.0	7,592.4
Flatfish	5,098.2	2,820.2	1,236.2	1,041.8
Mackerel . . .	5,453.3	5,453.3	-	-
Ocean perch	13,023.2	13,023.2	-	-
Other salt-water fish .	2/13,532.7	2/13,273.8	106.1	152.8
Brackish-water fish .	2,516.8	-	2,353.3	163.5
Total	209,744.9	171,756.7	23,303.2	14,685.0

^{1/}Preliminary.

^{2/}Includes catch off South Africa.

from the North Sea, and 32,000 tons from the Atlantic. The Polish catch in the Atlantic amounted to only 12,000 tons in 1962 and 205 tons in 1961.

Imports: Polish imports of fishery products in 1963 were up sharply from 1962, but the increase was largely due to heavier imports of fish meal. A gain in imports of salted herring in 1963 was partly offset by decline in imports of fresh and frozen herring.

Table 2 - Polish Imports of Fishery Products, 1956-1963

Product	1963	1962	1960	1958	1956
..... (Metric Tons)					
Mackerel, frozen	568	500	-	-	-
Herring, fresh and frozen . . .	3,891	5,992	4,014	5,464	6,703
Herring, salted . .	8,517	5,132	19,681	7,183	2,729
Fish fillets	-	-	1,419	2,009	-
Conserves ^{1/}	1,328	2,670	6,141	1,237	46
Caviar	10	10	10	-	15
Fish meal	30,000	13,000	6,406	1,487	3,121
Total	44,314	27,304	37,671	17,380	12,615

^{1/}Includes hermetically-processed canned pack and cold pack.

Exports: Polish exports of fishery products in 1963 were 55.6 percent above those in the previous year, due mainly to larger shipments of fresh and frozen fish.

Table 3 - Polish Exports of Fishery Products, 1963-1965

Product	1963	1962	1960	1958	1956
..... (Metric Tons)					
Fresh and Frozen:^{1/}					
Salmon	272	206	216	164	88
Other salt-water fish	4,270	405	-	2,000	-
Carp	380	379	546	497	486
Other fresh-water fish	892	933	852	746	948
Smoked fish	392	316	6	-	1
Salted fish	15	203	2,125	-	-
Conserves ^{2/}	3,414	3,733	2,807	1,155	1,661
Shellfish	32	36	30	52	30
Total	9,667	6,211	6,582	4,614	3,214

^{1/}Includes direct landings and sales in Ghana and Nigeria.

^{2/}Includes hermetically-processed canned pack and cold pack.

Overseas Bases: In 1963, the Polish fishery for herring in the North Sea was supported as usual by the motherships *Kaszuby* and *Pulaski* and the tender vessel *Jastarnia*. During periods of heavy catches, foreign vessels were chartered to serve as transport vessels. Overseas bases of a limited nature were also established. A transshipment base at the British port of North Shields was organized for the Polish fishing fleet during the summer of 1963. Polish vessels fishing off the southwest coast of Norway in late 1963 landed fresh herring in the Norwegian port of Haugesund for freezing and transshipment. The Belgian

Poland (Contd.):

port of Ostend was used in a similar manner by Polish vessels fishing in the English Channel during September-November 1963. (Polish Maritime News, No. 66.)

"SUPER TRAWLER" SINKS OFF ICELAND:

One of Poland's large fishing trawlers sank off the coast of Iceland this past April as a result of extensive bottom damage. The Wislok became grounded in shallow water the latter part of February. Salvage efforts by the Polish tug Coral, sent to the location of the grounded vessel to render assistance, were unsuccessful. The Wislok, described as a "super trawler" was of 600 gross tons and was built in Poland in 1958. (Unpublished source.)

**Portugal****CANNED FISH EXPORTS, 1962-1963:**

Portugal's total exports of canned fish during 1963 were down 5.5 percent from those in 1962, due to lower exports of sardines and anchovy fillets. The decline was partly offset by a considerable increase in exports of mackerel.

Sardines accounted for 75.2 percent of the 1963 exports of canned fish, followed by mackerel with 8.9 percent, anchovy fillets with 6.8 percent, tuna and tuna-like fish with 5.5 percent, and chinchards with 3.0 percent.

Portuguese Canned Fish Exports, 1962-1963				
Product	1963		1962	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
<u>In Oil or Sauce:</u>				
Sardines	53,484	2,815	59,102	3,110
Chinchards	2,134	112	2,054	108
Mackerel	6,323	253	4,258	170
Tuna and tuna-like . .	3,887	129	3,647	121
Anchovy fillets	4,811	481	5,832	583
Others	437	23	326	17
Total	71,076	3,813	75,219	4,109

Portugal's principal canned fish buyers during 1963 were Germany with 12,762 metric tons, followed by Italy with 11,778 tons, the United Kingdom 8,173 tons, the United States 7,168 tons, France 5,688 tons, and

Belgium-Luxembourg 4,679 tons. (Conservas de Peixe, February 1964.)

CANNED FISH PACK, 1962-1963:

Portugal's total pack of canned fish in oil or sauce in 1963 was down 7.7 percent from that in 1962, due mainly to a drop in the pack of sardines. The packs of mackerel and an-

Portuguese Canned Fish Pack, 1962-1963				
Product	1963		1962	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
<u>In Oil or Sauce:</u>				
Sardines	49,644	2,613	54,632	2,875
Chinchards	3,363	177	2,816	148
Mackerel	6,736	269	7,566	302
Tuna and tuna-like . .	5,907	197	5,399	180
Anchovy fillets	4,170	417	5,244	524
Others	600	32	661	35
Total	70,420	3,705	76,318	4,064

chovy fillets were also down. There were modest gains in the packs of chinchards and tuna and tuna-like fish. (Conservas de Peixe, February 1964.)

LOAN FUND TO RENOVATE FISHING FLEET:

As has been done periodically since 1959, the Portuguese Treasury has been authorized to extend a further credit of 50,000 contos (US\$1,750,000) to the Fund for the Renovation and Equipping of the Fishing Industry. The credit, bearing 4 percent annual interest, brings the total amount so lent in the past 5 years to \$14.7 million.

The high rate of obsolescence in the Portuguese fishing fleet and the increasing difficulty in supplying the domestic as well as the export market are of continuing concern to the Portuguese Government. Exports of canned fish accounted for 9.2 percent of Portugal's total exports during 1963, but periodic shortages of fresh fish in local markets have caused complaints, especially among those who can afford little meat. (United States Embassy, Lisbon, March 28, 1964.)



Somalia Republic

FISH-PROCESSING AND FREEZING PLANT TO BE BUILT IN ALULA AS JOINT U. S.-SOMALI VENTURE:

An agreement to establish a joint fish-freezing, processing, and marketing operation in Alula, in the northern part of Somali, was recently concluded by a local fisheries firm which is a subsidiary of a large United States fishery products processor and distributor. The plant is expected to cost about \$1 million and will be operated on an equal share investment basis. The agreement was signed on March 11, 1964, and is subject only to final approval of the respective boards of directors of the parent companies. The investment is covered by the U. S. Investment Guaranty Program and the Somali Foreign Investment Law which grants the enterprise a 10-year moratorium on income taxes. (United States Embassy, Mogadiscio, March 23, 1964.)



Surinam

FOUR NEW SHRIMP VESSELS DELIVERED TO JAPANESE FIRM IN SURINAM:

Four new steel shrimp vessels built by a shipyard in Rockport, Tex., are now engaged in the shrimp fishery off Surinam. The vessels were delivered in early 1964 to a Japanese firm in South America with headquarters in the port of Paramaribo.

Plans for the new vessels were drawn by a naval architect in Vancouver, B.C., Canada. His double-rig design was an adaption of a Bering Sea trawler built to operate in rough weather.

The Surinam shrimp fishery lies off the delta of the Orinoco River. A number of United States shrimp vessels also are fishing in the area under contract. (National Fisherman, April 1964.)



Taiwan

FISHERIES TRENDS, FEBRUARY 1964:

Tuna: Early this year, 36 small tuna long-line vessels left Taiwan for Malaysia where they will fish out of Penang, and 10 larger

tuna vessels sailed for American Samoa where they will fish for a United States cannery. Taiwan's tuna vessels are also operating in the Indian Ocean.

Sardines: Philippine buyers are reported to be considering Taiwan as a source of canned sardines. The annual catch of sardines in Taiwan exceeds 30,000 metric tons. Taiwan canneries are experimenting with using aluminum cans instead of tin cans for sardine packing. (Taiwan Industrial Panorama, February 29, 1964.)



Tunisia

FISHERIES TRADE WITH EAST GERMANY:

The Chief of the Fisheries Department of Tunisia departed Tunis on April 1, 1964, for a visit to France, Italy, and East Germany. He stated that his visit to East Germany would include negotiations on the sale of 1,000 metric tons of fish meal fertilizer as part of a commercial exchange agreement. He also said that shipyards in the Baltic (presumably East Germany) are building 10 steel trawlers of standard design for Tunisia, with the purchase price payable in 5 years. (United States Embassy, Tunis, April 17, 1964.)



Turkey

12-MILE FISHERIES LIMIT CONSIDERED:

On April 10, 1964, the Turkish House of Representatives discussed and approved on a priority basis the draft bill enlarging Turkish territorial waters from 3 to 6 miles, with fishing rights reserved out to 12 miles. The bill has been submitted to the Turkish Senate. If approved, it will come into force three months after promulgation in the Official Gazette.

Turkey's Black Sea neighbors and the United Arab Republic on the Mediterranean Sea have proclaimed 12-mile territorial waters. Other Mediterranean countries claim territorial waters extending for six miles.

The new Turkish bill also stipulates that, in case a country imposes wider territorial waters and fishing rights against Turkey, it

Turkey (Contd.):

will reciprocally apply the larger margin. (United States Embassy, Ankara, April 22, 1964.)



U.S.S.R.

SOVIET FISHING VESSELS RETURN TO NORTHWEST ATLANTIC:

In late April 1964, about 60 Soviet fishing vessels were sighted fishing for whiting off the New England coast of the United States. The fleet consisted of refrigerated transports, factory stern trawlers, and medium-class side trawlers. It was located in the vicinity of Lydonia Canyon about 130 miles east of Nantucket Island, Mass.

The number of Soviet vessels fishing along the New England coast reached a high of 300 during the summer of 1963.

The Soviet Union is one of 13 nations signatory to the International Convention for the Northwest Atlantic Fisheries. The only fish presently under the regulation of that Convention are haddock and cod. The size of mesh in nets used for the taking of those two species is prescribed by regulation, but the mesh size of nets used in taking other species is at the discretion of the fishermen.

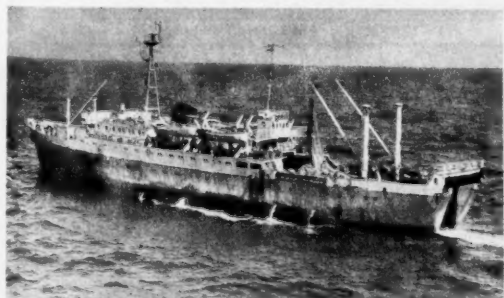
FISHING FOR TUNA IN SOUTH CHINA SEA:

The Soviet Union is conducting experimental trawl and tuna fishing in the South China Sea with a fleet of four vessels, which include a seiner and a research vessel, according to



Fig. 1 - Soviet fishing fleet off Cape Cod.

During the previous three years there was major Soviet fishing activity in the Northwest Atlantic, although few foreign vessels had been sighted in the area since November 1964.



Close up of Soviet stern factory trawler fishing off New England.

a Soviet press report dated April 7, 1964. This development is interpreted in Japan as the beginning on the part of the Soviet Union, which is now awaiting delivery of the tuna vessels it has placed on order with foreign firms, to engage in full-scale tuna fishing in the Pacific Ocean. (U.S.S.R. is reported to have on order from Japan five 5,000-ton class tuna factoryships.) (Suisancho Nippo, April 17, 1964.)

FISHING FLEETS OPERATING OFF U. S. COASTS IN 1963:

North Pacific and Bering Sea: A total of about 400 Soviet fishing vessels, at one time or another, fished in the North Pacific and Bering Sea during 1963. The peak number of fishing vessels at one time was about 200, the same as in 1962. But in 1963 most of the vessels were in the Gulf of Alaska rather than in the Bering Sea, and in July instead of in June. For the first time, the increased Soviet fishing effort in the

U.S.S.R. (Contd.):

Gulf of Alaska was augmented by entry into the king crab fishery. In June and July of 1963 at least two crab factoryships were reported south of Kodiak Island. By the end of July those factoryships had left the area to fish saury off the Kurile Islands in the western North Pacific Ocean. In 1963 (also for the first time) several large Soviet stern trawlers were reported operating off the western Aleutian Islands.

Five Soviet whaling fleets, with about 50 accompanying whale killers, operated mostly along the Aleutian Islands chain and eastward to southeast of Kodiak Island. Another whaling fleet operated in the Aleutian area while en route to Siberia from the Antarctic Ocean.

Ocean perch, herring, flatfish, Alaska pollock, Pacific cod, sablefish, and king crab were reported to have been caught. Unconfirmed reports indicate that the Soviet fleets in the area may have caught some shrimp. Soviet sources reported in early October that good catches of halibut and sablefish had been made by a research trawler operating in the Bering Sea in deep waters between 200 and 350 fathoms, but the exact location was not given.

Other Areas in the Pacific: No Soviet commercial fishery has as yet been reported off the coasts of Washington, Oregon, and California. As in 1962, a few Soviet exploratory fishing vessels appeared in that area during the summer and early fall. Some of them were also reported off the coast of British Columbia, Canada.

In May 1963, a Soviet whaling fleet with about 20 whale catchers was reported 200 to 300 miles off the coast of Washington and British Columbia. That fleet was actively whaling and was the same fleet, en route from the Antarctic, which was later reported whaling in the Aleutian Islands area.

Northwest Atlantic (Georges Bank): Soviet fishing on Georges Bank off the New England coast ceased in mid-November 1962, and resumed in force in June 1963 with a fleet of about 185 vessels. A peak number of over 200 Soviet vessels was reported operating on Georges Bank in August. Herring and whiting were the major species caught. Smaller quantities of haddock and cod, mostly caught incidentally to whiting, were also caught. Other species fished were ocean perch, flounder, halibut, and other bottomfish.

Middle and South Atlantic Coasts: Soviet stern trawlers and side trawlers fished off the United States east coast from Nantucket Island to Florida. The peak number of Soviet vessels fishing that area was estimated at about 40. Whiting and herring are known to have been taken. Other species believed to be of interest to the Soviets included menhaden, tuna, and shrimp.

Gulf of Mexico and Caribbean Sea: It was reported that 20 to 30 Soviet trawlers operated out of Cuba in 1963. The Soviets expect ultimately to have about 130 vessels operating out of Cuban ports where they will obtain maintenance, repair, and supply services. Also during 1963 a number of Soviet vessels stopped in Mexican and Caribbean ports for supplies.

* * * * *

FISHERIES DEVELOPMENT HAMPERED:

Soviet fisheries development is being held back by faulty planning. That was the conclusion of an editorial in the newspaper *Pravda*, Moscow, March 19, 1964. In spite of the increased Soviet fisheries catch (from about 3.1 million metric tons in 1959 to an estimated 4.5 million tons in 1963), the editorial claimed that the Soviet fishing fleet had reserves which were not being properly used.

The Soviet catch goal set for 1965 is 5.5 million tons, according to the British periodical *Fishing News*, March 6, 1964.

Pravda stated that much time was being lost by the North Atlantic fishing fleet because it had not been supplied with sufficient packaging material. The administrative level was charged with failure to plan properly for the needed cartons, barrels, and wooden crates.

The Soviet newspaper also pointed out that new areas of the fishing industry were being developed too slowly. Specific examples cited were: (1) lengthy experiments in tuna and mackerel fishing in the Pacific; (2) drawn-out discussions of ways to organize a fishery for Greenland halibut (*Reinhardtius hippoglossoides*) in the North Atlantic; and (3) lack of expansion effort in the fisheries for shrimp, mussel, and other shellfish items.

Pravda further stated that Soviet port facilities had not kept pace with growth in the fishing fleet. A shortage of repair facilities and refrigeration vessels was also mentioned.

The editorial concluded with the following statement: "The 22nd Soviet Communist Party Congress (in 1961) set the task--within the next 10 years--to increase substantially the growth of the per capita use of products, including fish and fish products. . . . This obligates the fishing industry to begin using reserves and the potential more quickly, to increase steadfastly the fish catch, to improve its quality, and to lower the cost of the wealth from oceans and seas."

* * * * *

SALMON CATCH, 1963:

The Soviet Union landed in 1963 a total of 81,070.8 metric tons of salmon, according to

U.S.S.R. Catch of Salmon by Areas, 1963						
Area	Species					
	Red	Chum	Pink	Silver	King	Total
	.....(Metric Tons).....					
West Kamchatka	2,538.4	1,237.9	5,062.9	4,803.7	187.8	13,830.7
East Kamchatka	894.8	6,774.8	13,655.4	2,442.7	815.3	24,583.2
Sakhalin-Kurile Is.	-	1,406.3	5,329.7	-	-	6,736.0
Okhotsk Region	8.8	8,527.0	5,542.2	93.7	-	14,171.7
Northern Okhotsk	-	1,780.0	3,780.0	13.0	-	5,573.0
Amur	-	13,839.7	832.9	-	-	14,672.6
Maritime Province	-	-	1,503.6	-	-	1,503.6
Total	3,442.0	33,565.7	35,706.7	7,353.1	1,003.3	81,070.8

data released by the Japanese Fisheries Agency. (*Suisancho Nippo*, March 21, 1964.)

United Kingdom

TWO BRITISH-BUILT PURSE-SEINE VESSELS ACQUIRED BY CHILEAN COMPANY:

The Amanzule and Asuokaw, two tuna purse-seine vessels built in a British shipyard for the Ghana Fishing Corporation several years ago, have changed their names and ownership. Now known as La Patria and Flor de Chile, they have been acquired by a Chilean fishing company and will be based at Iquique in northern Chile after a 7,000-mile delivery trip. The vessels had been out of commission at Hull, England, for about a year.

The future of two other purse-seiners built in Britain for Ghana is still uncertain. Both vessels are now in England. One, the Fawn-

pawn, is at Hull and the other, the Kpeshie, is at Appledore.

Commenting on West African fishing methods, a representative of a trawler company who was in Ghana when the Amanzule and Asuokaw were fishing there said, "The tuna fish in West African waters are more easily caught by long-lining rather than by purse-seining, which is the method used by these vessels..."

The 4 tuna purse-seiners built for the Ghana Fishing Corporation were part of an order for 6 vessels. The other two vessels, which are stern trawlers, are still in service in Ghana. (The Fishing News, March 13, 1964.)

Note: See Commercial Fisheries Review, November 1963 p. 63.



DISTRIBUTION AND MOVEMENTS OF FUR SEALS

The northern fur seal, an abundant and widely ranging mammal, is seldom observed alive except by fishermen and seamen working offshore or by visitors to the Alaskan and Asian Islands where the seals breed.

Originally the fur seals that breed on the Pribilof Islands, on the Commander Islands, and on Robben Island and some of the Kurile Islands (Pribilof Islands are U. S. territory; Commander, Robben, and Kurile Islands are under the administration of the U. S. S. R.) were described as three separate species because of supposed differences in color and in shape of head and neck. They have since been found to be indistinguishable by physical appearance and measurements; their wintering grounds overlap; and tagged seals, especially young males, are regularly found in small numbers on rookery islands other than where born. Therefore, the fur seals of the North Pacific are now considered to belong to a single species, Callorhinus ursinus.

Except as stragglers, few fur seals range north of the Pribilof Islands. They migrate south to the Channel Islands off Santa Barbara, Calif. In the west they range from the vicinity of the Commander Islands to the seas southwest of Kinkazan Peninsula on northern Honshu and into the Sea of Japan.

Fur seals breed on the following islands: St. Paul and St. George Islands and Sea Lion Rock of the Pribilof group in Alaska; Copper and Bering Islands of the Commander group off Kamchatka; Robben Island, off Sakhalin; Kotikovaya Rock and Srednevoia Island in the Kurile Chain of Islands. Seals were also reported by the Soviet Institute of Oceanology to be on the Kurile Islands, Paramushir and Urup, but no pups were seen. Fur seals of the Kurile Islands were thought to be exterminated by sealers in the 1890's; however, in 1955 and 1956, investigations revealed their presence once again, in small numbers. About 80 percent of the northern fur seals are from the Pribilof Islands.

--Excerpted from:

The Northern Fur Seal, Circular 169,
U. S. Bureau of Commercial Fisheries,
Washington, D. C.



FEDERAL ACTIONS

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

CANNED TUNA STANDARD OF IDENTITY AMENDED:

The Commissioner of the U. S. Food and Drug Administration signed an order April 10, 1964, adopting a proposed amendment to the standard of identity for canned tuna. The amendment will permit the use of sodium acid pyrophosphate as an optional ingredient to prevent the formation of struvite.

The order as published in the Federal Register, April 16, 1964, follows:

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER B—FOOD AND FOOD PRODUCTS

PART 37—FISH; DEFINITIONS AND STANDARDS OF IDENTITY; STANDARDS OF FILL OF CONTAINER

Canned Tuna; Order Listing Sodium Acid Pyrophosphate as Optional Ingredient

In the matter of amending the standard of identity for canned tuna (21 CFR 37.1) by listing sodium acid pyrophosphate in an amount not to exceed 0.15 gram per ounce, net weight, as an optional ingredient of canned tuna for inhibiting the development of struvite crystals in the food:

The notice of proposed rule making in the above-identified matter published in the Federal Register of February 6, 1964 (29 F.R. 1807) elicited only one comment, which favored the proposal. Therefore, in consideration of the information furnished in the petition, the comment received, and other relevant information available, it is concluded that it would promote honesty and fair dealing in the interest of consumers to amend the definition and standard of identity for canned tuna as hereinafter set forth. Pursuant to the authority vested in the Secretary of Health, Education, and Welfare by the Federal Food, Drug, and Cosmetic Act (secs. 401, 701,

§2 Stat. 1046, 1055 as amended 70 Stat. 519; 21 U.S.C. 341, 371) and delegated to the Commissioner of Food and Drugs by the Secretary (21 CFR 2.90; 29 P.R. 471): It is ordered, That §37.1 be amended as set forth below:

Paragraph (a) is amended; and paragraph (h) is amended by redesignating subparagraph (7) as (8) and by inserting a new subparagraph (7). As amended, the affected portions of the section read as follows:

§ 37.1 Canned tuna; definition and standard of identity; label statement of optional ingredients.

(a) Canned tuna is the food consisting of processed flesh of fish of the species enumerated in paragraph (b) of this section, prepared in one of the optional forms of pack specified in paragraph (c) of this section, conforming to one of the color designations specified in paragraph (d) of this section, in one of the optional packing media specified in paragraph (e) of this section, and may contain one or more of the seasonings and flavorings specified in paragraph (f) of this section. For the purpose of inhibiting the development of struvite crystals, sodium acid pyrophosphate may be added in a quantity not in excess of 0.5 percent by weight of the finished food. It is packed in hermetically sealed containers and so processed by heat as to prevent spoilage. It is labeled in accordance with the provisions of paragraph (h) of this section.

(h) . . .

(7) Where the canned tuna contains the optional ingredient sodium acid pyrophosphate as provided in paragraph (a) of this section, the label shall bear the statement "pyrophosphate added" or "with added pyrophosphate."

(8) Wherever the name of the food appears on the label so conspicuously as to be easily seen under customary conditions of purchase, the names of the optional ingredient used, as specified in subparagraphs (3), (6), and (7) of this paragraph, shall immediately and conspicuously precede or follow such name, without intervening, written, printed, or graphic matter, except that the common name of the species of tuna fish used may so intervene; but the species name "albacore" may be employed only for canned tuna of that species which meets the color designation "white" as prescribed by paragraph (d)(1) of this section.

Any person who will be adversely affected by the foregoing order may at any time within 30 days from the date of its publication in the Federal Register file with the Hearing Clerk, Department of Health, Education, and Welfare, Room

5440, 330 Independence Avenue SW., Washington, D.C., 20201, written objections thereto, preferably in quintuplicate. Objections shall show wherein the person filing will be adversely affected by the order and specify with particularity the provisions of the order deemed objectionable and the grounds for the objections. If a hearing is requested, the objections must state the issues for the hearing, and such objections must be supported by grounds legally sufficient to justify the relief sought. Objections may be accompanied by a memorandum or brief in support thereof.

Effective date. This order shall become effective 60 days from the date of its publication in the *FEDERAL REGISTER*, except as to any provisions that may be stayed by the filing of proper objections. Notice of the filing of objections or lack thereof will be announced by publication in the *FEDERAL REGISTER*.

(Secs. 401, 701, 23 Stat. 1046, 1066 as amended 70 Stat. 919, 21 U.S.C. 941, 971)

Dated: April 10, 1964.

GEO. P. LARRICK,
Commissioner of Food and Drugs.



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

PROPOSALS FOR PROCESSING, PROMOTING, AND SELLING ALASKA SEALSKINS:

Four firms submitted proposals for processing, promoting, and selling Alaska sealskins for the account of the United States Government, the Department of the Interior announced on April 15, 1964. Two other firms submitted proposals only for selling finished sealskins.

Firms submitting proposals for processing sealskins were required to submit samples of their workmanship in converting raw sealskins into finished luxury furs, using raw sealskins provided by the U. S. Bureau of Commercial Fisheries.

A comprehensive evaluation was undertaken to determine the relative quality of the sample sealskins submitted by firms seeking the processing contract. This was expected to be completed by mid-June and the start of contract negotiations was expected to be about July 1, 1964. A new contract, or contracts, for processing and selling Alaska sealskins for the Federal Government should be arranged by midsummer 1964.

The quality evaluation of the sample furs was based primarily on a 3-phase program: Evaluation by a panel of experts from 5 Department of the Federal Government; physical and chemical tests to be conducted by the National Bureau of Standards; and marketability study based on garments manufactured from the sample sealskins.

The fur seal herds of the Pribilof Islands, Alaska, are managed under the terms of a treaty to which Japan, Canada, the U. S. S. R., and the United States are parties. An amendment to the treaty was ratified April 10, 1964, extending its duration to 1969. Under treaty protection, the Pribilof seal herd has increased to its present estimated size of 1,500,000 animals, from which a substantial annual harvest can be anticipated on a continuing basis.

* * * * *

EMERGENCY FISHERY LOAN OFFICE OPENED IN ALASKA:

An emergency office was opened in Kodiak, Alaska, in April 1964, to arrange for loans to fishing vessel owners in the Kodiak area whose vessels or fishing gear were lost or damaged during the March earthquake. The April 8 announcement by Secretary of the Interior Stewart L. Udall, of the opening of an emergency office there, followed a recommendation made by Under Secretary of the Interior James K. Carr who had been on an inspection trip of the disaster area.

The emergency office was open for business on April 11 and was headed by the Chief of the Branch of Loans and Grants, Bureau of Commercial Fisheries, in Washington, D. C. Arrangements were made for immediate processing of loan applications so that vessels could be made ready for the approaching fishing season in that area. The Bureau's Alaska Loan Office in Juneau was also prepared to receive applications for priority action. Similar offices were to be set up in other localities if conditions warranted the establishment of such emergency offices.

This emergency action was taken under the Secretary's authority to operate a fisheries loan program which permits loans for financing and refinancing operations, maintenance, repair, replacement, and equipment of fishing vessels and gear.

* * * * *

WHALING LICENSES ON PACIFIC COAST:

Notice of a delegation of authority within the Bureau of Commercial Fisheries concerning the issuance of licenses relating to whaling on the Pacific Coast was published in the Federal Register, April 9, 1964. The notice stated, "(a) The authority to execute, on behalf of the Bureau of Commercial Fisheries, annual licenses required for whale catchers and whale land stations conducting whaling operations along the Pacific Coast, is hereby delegated to the Regional Director, Pacific Northwest Region (Region 1), Bureau of Commercial Fisheries, Seattle, Washington. (b) The authority delegated in section (a) may not be redelegated by the Regional Director."

**U. S. Tariff Commission****GROUND FISH FILLETS RESERVED FROM TRADE-AGREEMENT NEGOTIATIONS:**

Groundfish fillets (cod, cusk, haddock, hake, pollock, and Atlantic ocean perch, under Tariff Schedules of the United States Item Nos. 110.50 and 110.55) will be reserved from the President's list of articles up for tariff modification in the forthcoming trade negotiations under the General Agreement on Tariffs and Trade.

The determination was contained in a U. S. Tariff Commission report to the President on April 22, 1964, stating that economic conditions have not substantially improved in the industry since the Commission found on May 7, 1954, and October 12, 1956, that groundfish fillets were being imported into the United States in such increased quantities as to cause serious injury to the domestic industry producing like or directly competitive products.

The Tariff Commission's report on April 22, 1964, contained the results of its investigations numbered TEA-225(b)-1 to 15 under section 225(b) of the Trade Expansion Act of 1962. Under conditions set forth in section 225(b), certain articles included in the President's list furnished to the Commission on October 22, 1963, pursuant to section 221 of the Trade Expansion Act, must be reserved from negotiation for the reduction of duty or other import restriction or the elimination of duty. This reservation provision applies to any article with respect to which (1) the Commission in escape-clause proceedings concluded prior to October 11, 1962, found by majority vote that such article was being imported in such increased quantities as to cause or threaten serious injury to an industry; (2) there was not in effect on October 11, 1962, any action taken under section 7 of the Trade Agreements Extension Act of 1951; (3) a request for reservation on behalf of the industry concerned is filed with the Commission not later than 60 days after publication of the President's list; and (4) the Commission finds and advises the President that economic conditions in such industry have not substantially improved since the date of the report of the finding referred to in (1). (U. S. Tariff Commission, Washington, D. C., April 22, 1964.)

The announcement of the Tariff Commission's report to the President was published in the April 28, 1964, Federal Register.

**Department of the Treasury****BUREAU OF CUSTOMS****IMPORTS OF TUNA CANNED IN BRINE UNDER QUOTA PROVISIO FOR 1964:**

The quantity of canned tuna in brine which may be imported into the United States during calendar year 1964 at the 12½ percent rate of duty is limited to 60,911,870 pounds (or about 2,900,565 standard cases of 48 7-oz. cans). This is 3.5 percent less than the 63,130,642 pounds (about 3,006,221 standard cases) in 1963; but 3.1 percent more than the 59,059,014 pounds (about 2,812,000 standard cases) in 1962; 6.6 percent more than the 57,114,714 pounds in 1961; 14.0 percent more than the 53,448,330 pounds in 1960; and 16.3 percent more than the 52,372,574 pounds in 1959. Any imports in excess of the 1964 quota will be dutiable at 25 percent ad valorem.

The quota, which was issued pursuant to the provisions of Item 112.30, Tariff Schedules of the United States, is limited to 20 percent of the United States pack of canned tuna during the preceding year.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade.

The 1964 tariff-rate quota was published in the Federal Register, page 5405, April 22, 1964, by the Bureau of Customs of the U. S. Department of the Treasury.

Note: See Commercial Fisheries Review, May 1963 p. 47.

**Eighty-Eighth Congress
(Second Session)**

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.



ALASKA CLAIMS COMMISSION: Three nominations to the Temporary Alaska Claims Commission were confirmed by the Senate on May 5, 1964.

ALASKAN DISASTER: See heading "Fisheries Legislation" for report on House hearings on this subject.

On April 20, 1964, Senator Gruening spoke from the floor of the Senate inserting in that day's Congressional Record, (pages 8176-8177), additional news article concerning the earthquake damage in Alaska.

Senator Bartlett addressed the Senate on April 20, 1964 (Congressional Record, pages 8198-8199), expressing the appreciation of the Alaskans for the generosity of Americans in their contributions.

Senator Gruening spoke from the floor of the Senate on the subject of interest rates on small business loans in the Alaska disaster area on several occasions: on April 21, 1964 (Congressional Record, pages 8349-8350), his remarks included a letter from the Senator to the Administrator of the Small Business Administration; on April 22, 1964 (Congressional Record, pages 8412-8413), his remarks included an article concerning Alaskan coastline changes caused by the earthquake; and on April 29, 1964 (Congressional Record, pages 9238-9239), his remarks included an exchange of letters between the Senator and the Administrator of the Small Business Administration.

Senator Bartlett spoke from the floor of the Senate on April 22, 1964, discussing effects of the Alaskan earthquake. He also included a newspaper article on Alaskan coastline changes by the earthquake in his remarks (Congressional Record, pages 8481-8482); and on May 13, 1964 (Congressional Record, pages 10479-10480), his remarks included an editorial ("Alaska Aid") published in the May 11, 1964, issue of the Seattle Post-Intelligencer.

On May 1, 1964, Senator Gruening spoke from the floor of the Senate and inserted in that day's Congressional Record (pages 9468-9469) an address by Senator Anderson to the Anchorage, Alaska, Chamber of Commerce concerning the Alaskan disaster relief programs.

Senator Hartke on May 1, 1964, under an extension of remarks inserted in that day's Congressional Record (page A2212) a resolution of support adopted by the Indiana State Bar Association for S. 2719, a bill to provide relief to individuals who suffered substantial economic losses in the Alaska earthquake disaster.

On May 12, 1964, Senator Bartlett from the floor of the Senate inserted in that day's Congressional Record (page 10264) a speech by the Administrator of the Small Business Administration (SBA) given May 10, 1964, in Fairbanks, Alaska. The Administrator's speech contained references to the fishing industry and he stated in part, "The fishing industry is of course essential to Alaska's economy, and here again, Federal programs are being coordinated as a means of giving all possible help. The SBA and the Fish and Wildlife Service of the Department of the Interior are conducting a joint program of assistance. Under the law which governs most of SBA's operations, a fisherman whose boat was lost or damaged in the disaster is eligible for an SBA loan to charter a boat for the fishing season or until he can repair or replace his damaged boat. The SBA loan also may be used for travel ex-

penses to the 'lower 48' to select a replacement boat and return it to the Alaskan fishing grounds, and for operating capital during the fishing season. Our Agency also may make loans to repair or replace commercial boats damaged or destroyed by the disaster. However, under the present arrangement between agencies, the Interior Department is making the loans for this purpose. If and when that Department can no longer make the loans, or if for any reason it cannot help with the needs of a particular fisherman, then the SBA will step in and provide assistance. . . ."

ALASKA OMNIBUS ACT AMENDMENTS: S. 2772 (Jackson et al) introduced in the Senate April 25, 1964, to amend the Alaska Omnibus Act; referred to the Committee on Interior and Insular Affairs. In introducing the bill Senator Jackson said in part, "The Alaska Omnibus Act (P. L. 86-70) was enacted following Alaska's admission to statehood to assist that State perform certain functions which had previously been borne by the Federal Government. A total of \$28,500,000 of 'transitional' grants to Alaska were authorized to help her assume her responsibilities as a State. 'The severe earthquake which struck Alaska on March 27 has prompted the President to offer these amendments. The previously authorized transitional grants will expire on June 30, 1964. . . . The earthquake has, in effect, delayed the day when Alaska can be expected to complete an orderly transition to full statehood responsibilities. The disaster will reduce Alaska's revenues below the level required to finance its increased functions as a State. To fill the gap, section 1 of the proposed bill would provide for a continuation of the transitional grants until June 30, 1966, and an authorization of \$22,500,000 for such grants. While the earlier grants were based largely on the amounts the Federal Government would have spent on the programs assumed by Alaska, the proposed grants are based on an estimate of the amounts by which State and local revenues will fall short of expectations because of the earthquake, together with certain funds required to meet extraordinary operating expenses. . . ." (Congressional Record, page 8792.) Other sections of the proposed legislation would extend certain other features of the original transition program.

H. R. 11037 (Aspinall) and H. R. 11038 (Rivers), introduced in the House April 27, 1964, to amend the Alaska Omnibus Act; both referred to the Committee on Interior and Insular Affairs, similar to S. 2772.

The Senate Committee on Interior and Insular Affairs on May 4, 1964, favorably reported (S. Rept. 1020), with amendment S. 2772.

S. Rept. 1020, Alaska Earthquake Grants (May 4, 1964, report from the Committee on Interior and Insular Affairs, United States Senate, 88th Congress, 2nd Session), 8 pp., printed. The Committee favorably reported with amendment S. 2772, to amend the Alaska Omnibus Act, and recommended passage. Contains explanation of the bill, which would add an additional \$23.5 million to the transitional grants of \$28.5 million authorized by the 1959 statute for the new State and extend the time in which the Federal Government may continue to provide services that customarily are a State function. Also gives background facts, executive communications, and changes in existing law.

On May 6, 1964, the House Committee on Interior and Insular Affairs held a hearing on H. R. 11037. The Committee heard testimony from Governor Egan of Alaska, and a public witness.

On May 13, 1964, the Senate passed, with Committee amendments, S. 2772 to amend the Alaska Omnibus Act. The bill would provide for a continuation of the transitional Federal grants to Alaska until June 30, 1966. The Committee amendment raised the authorization from \$22.5 million to \$23.5 million. Senator Jackson's remarks on the bill appear in that day's Congressional Record (pages 10483-10485).

On May 13, 1964, the House Committee on Interior and Insular Affairs ordered favorably reported amendment to the House H. R. 11037, the Alaska Omnibus Act (H. Rept. No. 1410).

ALASKAN RECONSTRUCTION OFFICE: The Senate Committee on Interior and Insular Affairs continued hearings on May 4, 1964, on S. 2719, to amend the Alaska Statehood Act to provide for earthquake insurance retroactive to the date of Alaska statehood and establish Office of Alaska Reconstruction. On May 5, 1964, the Senate Committee on Interior concluded hearings.

ANADROMOUS FISH CONSERVATION: H. R. 11160 (Tupper), introduced in the House May 6, 1964, a bill to authorize the Secretary of the Interior to initiate a program for the conservation, development, and enhancement of the Nation's anadromous fish in cooperation with the several States; referred to the Committee on Merchant Marine and Fisheries. This bill is similar to H. R. 2392, which was endorsed, with recommended amendments by the Department of the Interior. Estimated cost of the expanded program would be built up to more than \$8 million by 1968.

ANTIDUMPING ACT AMENDMENT: H. R. 10978 (McMillan), introduced in the House April 21, 1964, to amend the Antidumping Act, 1921; also H. R. 11005 (Byrne) introduced in the House on April 22, and H. R. 11116 (Morgan) introduced in the House May 4; referred to the Committee on Ways and Means. Similar or identical to bills previously introduced.

CALIFORNIA CANNING INDUSTRY: Senator Kuchel, on April 22, 1964, spoke from the floor of the Senate on the accomplishments of the California canning industry, as indicated by a recent study sponsored by the National Canners Association. The study included references to the California fish-canning industry. (Congressional Record, page 8480.)

CHEMICAL PESTICIDES COORDINATION: The House Committee on Merchant Marine and Fisheries on April 21, 1964, in executive session ordered reported favorably (H. Rept. 1339) to the House H. R. 4487 (amended), to amend the Act of August 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and pesticides.

H. Rept. 1339, To Prevent or Minimize Injury to Fish and Wildlife from the Use of Insecticides, Herbicides, Fungicides, and Other Pesticides (April 23, 1964, Report from the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 2nd Session, to accompany H. R. 4487), 11 pp., printed. The Committee reported the bill with amendments and recommended passage. Contains purpose of the bill, background of the legislation, section-by-section analysis, discussion of the amendments, cost of the legislation, Federal Agency comments, and changes in existing law.

On May 12, 1964, the Senate Committee on Commerce met in executive session and ordered reported favorably S. 1251 (with an amendment in the nature of a substitute)—this bill similar to H. R. 4487. The present appropriation authorization for Interior studies on the effects of insecticides is limited to \$2,565 million. This bill would raise that authorization to \$3.2 million for the first year and \$5.0 million thereafter.

COMMERCIAL FISHERIES FUND: See under heading "Fisheries Legislation" for report on House hearings on bills on this subject.

The House Committee on Merchant Marine and Fisheries on April 21, 1964, met in executive session and ordered reported favorably (H. Rept. 1363), to the House S. 627 (amended), to promote State commercial fishery research and development projects and for other purposes.

H. Rept. 1363, Promoting State Commercial Fishery Research and Development Projects (April 28, 1964, Report from the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 2nd Session, to accompany S. 627), 20 pp., printed. The Committee reported the bill with amendments and recommended passage. Contains purpose of the bill, need for the legislation, background of the legislation, section-by-section analysis, the amendments, cost of the legislation, conclusion, departmental reports, changes in existing law, and loan procedures.

On May 4, 1964, the House passed with amendments S. 627. The text of the bill as passed by the House appears in the Congressional Record (pages 9651-9658).

On May 6, 1964, the Senate concurred with House amendments to S. 627. This action cleared the legislation for the President. The amended legislation authorizes the Secretary of the Interior to cooperate with the States through their respective State agencies in carrying out projects designed for the research and development of the commercial fisheries resources of the Nation. Appropriations to carry those purposes are authorized under sections 4(a), (b), and (c) of the Act. Section 4(a) authorizes annual appropriations to the Secretary of the Interior of \$5 million during a total 5-year program. The funds would be apportioned among the States on a matching basis according to the extent of commercial fisheries in each State as represented by the value of raw fish harvested by domestic fishing vessels and received within each State plus the average value of the fishery products manufactured within each State. However, no State may receive an apportionment for any fiscal year of more than 6 percent of the total funds. As amended, section 4(b) authorizes separate and additional annual appropriations of \$400,000 for the first 2 years of the program and \$650,000 for the next 3 succeeding years, which shall be made available to States in amounts as the Secretary of the Interior may determine appropriate for the purposes of the Act: Provided that the Secretary shall give a preference to those States in which he determines there is a commercial fishery failure due to a resource disaster arising from natural or undetermined causes. Section 4(c) would authorize an additional annual appropriation of \$100,000 during the 5-year program, which shall be made available to the States in such amounts as the Secretary of the Interior may determine for developing a new commercial fishery therein. Each State desiring to take advantage of the benefits of the Act is required to submit plans for any proposed proj-

ect to the Secretary of the Interior. The Secretary has the authority to approve the plans and pay to the State the Federal share of any approved project in an amount not exceeding 75 percent of the total cost. The amended bill also contains provisions which would amend section 4 of the Fish and Wildlife Act of 1956. This would permit the Secretary of the Interior to use funds appropriated under the Bureau of Commercial Fisheries' Fishery Loan Program, to make loans to commercial fishermen "for the purpose of chartering fishing vessels pending the construction or repair of vessels lost, destroyed, or damaged by the earthquake of March 27, 1964." Funds for those loans would be available until June 30, 1966, and repayment would be made "only. . . from the net profits of the operations of such chartered vessels, which profits shall be reduced by such reasonable amounts as determined by the Secretary for the salary of the fishermen chartering such vessels."

COMMERCIAL FISHERY RESOURCES SURVEY:

S. J. Res. 174 (Magnuson) introduced in the Senate April 23, 1964, to authorize and direct the Bureau of Commercial Fisheries to conduct a survey of the marine and fresh-water commercial fishery resources of the United States, its territories, and possessions; referred to the Committee on Commerce. Senator Magnuson referred to a previous survey of United States fisheries made shortly after World War II, and then stated, in part, "Since then many new conditions and circumstances have arisen affecting the living resources of the adjacent seas and the many industries utilizing these resources. . . . The depletion of favored food species is occurring not only in waters that are the mainstay of our own fisheries, but around the world. From 1961 to 1962 the world salmon catch declined 220,000 metric tons, a drop of 29 percent. World catches of halibut, sole, and flounder fell 8 percent. . . . External pressures also are threatening the fishery resources in many of our adjacent waters. Massive foreign fishing fleets from overseas are penetrating our richest fishing grounds--grounds where Americans have been fishing for more than 300 years. The survey proposed in the joint resolution would include not only a comprehensive inventory of resources, but studies of production, processing, distribution, transportation, marketing, and storage methods and facilities, and findings on the effects of overfishing by foreign fleets on employment and the national economy. . . ." (Congressional Record, pages 8595-8596, April 23, 1964.)

CONSERVATION OF MARINE FISHERIES RESOURCES: H. Rept. 1356, Prohibition of Foreign Fishing Vessels in the Territorial Waters of the United States (April 28, 1964, Report from the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress, 2nd Session, to accompany S. 988), 20 pp., printed. The Committee reported the bill with amendments and recommended passage. Contains purpose of the bill, need for the legislation, section-by-section analysis, background of the legislation, discussion of the amendments, cost of the legislation, changes in existing law, and departmental reports.

On May 4, 1964, the House passed and sent to the Senate amended S. 988, a bill to prohibit fishing in the territorial waters of the United States and certain other areas by persons other than nationals or inhabitants of the United States. The text of the bill as passed by the House appears in the Congressional Record (pages 9647-9649.)

On May 6, 1964, the Senate agreed to the House amendments to S. 988, to prohibit fishing in the ter-

ritorial waters of the United States and certain other areas by persons other than nationals or inhabitants of the United States. This action cleared the legislation for the President's signature. The amended bill declares that it is unlawful for foreign vessels to engage in the fisheries within the territorial waters of the United States and its territories and possessions and the Commonwealth of Puerto Rico, or within any waters in which the United States has the same rights in respect to fisheries as it has in its territorial waters, or to engage in the taking of any Continental Shelf fishery resource which appertains to the United States, except as provided by the Act or as expressly provided by an international agreement to which the United States is a party. Violators would be subject to a fine of not more than \$10,000 or imprisonment of not more than 1 year or both. Every vessel employed in any manner in connection with a violation of the Act shall be subject to forfeiture and all fish taken or retained in violation of the Act or the monetary value thereof shall be forfeited. Enforcement is to be the joint responsibility of the Secretary of the Interior, the Secretary of the Treasury, and the Secretary of the Department in which the Coast Guard is operating; and such State and territorial officers as the Secretary of the Interior may designate. The Secretary of the Treasury and Interior would be authorized jointly or severally to issue such regulations as they determine necessary to carry out the provisions of the Act. The amended bill contains a definition of Continental Shelf fishery resources which states "As used in this Act, the term 'Continental Shelf fishery resources' includes the living organisms belonging to sedentary species; that is to say, organisms which at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil of the Continental Shelf." The approved amendments to the bill would permit the Secretary of the Treasury, after giving 60 days written notice to the President of the Senate and the Speaker of the House, to authorize a foreign vessel to engage in fishing "for designated species" in the U.S. waters "or within any waters in which the United States has the same rights in respect to fisheries as it has in its territorial waters, or for resources of the Continental Shelf which appertain to the United States." This permission would be granted only after the Secretaries of State and Interior have certified that it would be in the national interest, and upon concurrence of "any State, Commonwealth, territory or possession directly affected," and after a finding by the Secretary of the Interior that the country involved extends the same privileges to U.S. vessels. The amended bill would also permit the Secretary of State, with concurrence of the Secretaries of the Treasury and the Interior to grant permission to a vessel "owned or operated by an international organization of which the United States is a member to engage in fishery research within the territorial waters of the United States. . . and to land its catch in a port of the United States, in accordance with such conditions as the Secretary may prescribe whenever they determine such action is in the national interest." The title of the amended bill was changed so as to read "An Act to prohibit fishing in the territorial waters of the United States and in certain other areas by vessels other than vessels of the United States and by persons in charge of such vessels."

CONTINENTAL SHELF CONVENTION: On May 12, 1964, Senator Bartlett spoke from the floor of the Senate concerning the ratification by the United Kingdom of the International Convention on the Continental Shelf. The Convention will come into effect on June 10, 1964. The Senator stated in part, "The International Conven-

tion on the Continental Shelf was one of four conventions adopted in 1958 at the United Nations Conference on the Law of the Sea. The Convention on the High Seas has been ratified by the required number of nations including the United States and became effective last summer. The Convention on the Continental Shelf will be the second of the four conventions to come into force. This will leave the Convention on the Territorial Sea and the Convention on Fishing and Conservation of the Living Resources of the High Seas to be favorably acted upon later. . . . The United States has ratified all four. The Senator continued: "In essence, the Continental Shelf Convention provides that each coastal nation has exclusive rights to the resources of the Continental Shelf extending beyond the limits of its territorial waters. The Continental Shelf Convention was endorsed by 63 of the 85 nations present and voting at the 1958 conference. This number is well in excess of the two-thirds vote required for the convention's acceptance. The overwhelmingly favorable vote demonstrated the consensus among nations that the convention's terms are acknowledged international law. The 22 countries that have ratified the convention are: United States, Byelorussia, Colombia, Czechoslovakia, Guatemala, Haiti, Israel, Poland, Portugal, Ukrainian Russia, U.S.S.R., Venezuela, Denmark, Australia, South Africa, Cambodia, Malaysia, Senegal, Rumania, Malagasy Republic, Bulgaria, and the United Kingdom.

"The convention, in part, confirms unilateral action taken by our country under the Truman proclamation on the Continental Shelf of 1946, and the Submerged Lands Act and the Outer Continental Shelf Lands Act of 1954. These acts give to the Federal Government, with certain exceptions, all rights over the mineral resources on the Continental Shelf. These acts at the same time confirm state jurisdiction over the regulation of fishing resources. The Continental Shelf Convention provides as follows: 'The coastal state exercises over the Continental Shelf sovereign rights for the purpose of exploring it and exploiting its natural resources. *** The natural resources referred to in these articles consist of the mineral and other nonliving resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which at the harvestable stage either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or subsoil.' . . ."

Senator Bartlett also included a table in the Record indicating the value of the catch of oysters, Dungeness, and king crabs, and clams taken by the states in 1961. (Congressional Record, pages 10326-10328.)

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT: On April 29, 1964, the House concurred in a Senate amendment to a House amendment to S. 1605, to amend the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, to provide for labeling of economic poisons with registration numbers, and to eliminate registration under protest. This action cleared the legislation for the President.

S. 2792 (Ribicoff et al) introduced in the Senate on April 30, 1964, to amend the Federal Insecticide, Fungicide, and Rodenticide Act in order to provide for more effective regulation under such act, and to provide for certain control of waste disposal in connection with the manufacture, formulation, or other processing of economic poisons; referred to the Committee on Agriculture and Forestry. The text of the bill was printed in the Congressional Record, pages 9317-9318.

Introducing the bill, Senator Ribicoff stated, in part, "The bill I introduce today follows in many respects the regulatory pattern already established to assure safety and high quality in the field of drugs. First, it requires every pesticide manufacturer and packager to register annually with the Department of Agriculture his name and places of business. Second, it permits inspection of establishments in which pesticides are made, processed, packed or held. Third, it provides that a pesticide shall be deemed adulterated--and thus subject to seizure or injunction against shipment--if the facilities or methods used in production do not conform to or are not operated or administered in conformity with current good manufacturing practice to assure that the pesticide meets requirements of safety, identity, strength, quality, and priority. Fourth, it empowers Federal courts to issue injunctions to enforce the act and to restrain violations of it. Fifth, it amends the penalty provisions of existing law by adding civil remedies and establishing willfulness as an element of existing criminal violations. Sixth, it requires every pesticide manufacturer and packager to obtain a Federal waste disposal permit, to make sure that waste disposal in the manufacturing process will not cause air or water pollution that endangers public health or welfare. . . ." (Congressional Record, pages 9317-9318.)

H. R. 11110 (Rosenthal) introduced in the House May 4, 1964, to amend the Federal Insecticide, Fungicide, and Rodenticide Act to provide for more effective regulation under such act, and for other purposes; referred to the Committee on Agriculture.

On May 12, 1964, the President signed into law S. 1605 (P. L. 88-305).

FISHERIES LEGISLATION: Miscellaneous Fisheries Legislation--Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, 88th Congress (2nd Session), on Commercial Fishery Research (S. 627, H. R. 3738, H. R. 5229, H. R. 5539, H. R. 5561, H. R. 5798, H. R. 7698, H. R. 7710, H. R. 7766, H. R. 8537), March 3-5, 1964; Alaska Fishery Problems, April 16, 1964; Marine Mammal Protection (H. R. 5240), June 19, 1963; Fishing Rights for Vessel SC-1473 (H. R. 6007), March 5, 1964; Serial No. 88-18, 348 pp., printed. Contains reports on indicated hearings, and statements of Senators, Congressmen, Federal and State officials, and public witnesses.

FISHERIES LIMITS: On April 20, 1964, Congressmen Tollefson, Westland, and Clausen spoke from the floor of the House expressing their concern over the Canadian proposal to establish a 12-mile fisheries limit. (Congressional Record, pages 8144-8146.)

FISHING VESSEL PROTECTION: H. R. 10986 (Tollefson) introduced in the House April 21, 1964, and H. R. 11158 (O'Neill), introduced in the House on May 6, to aid in the protection of the rights of vessels of the United States engaged in the fisheries and related activities in international waters, and for other purposes; referred to the Committee on Ways and Means. Congressman O'Neill's remarks in the Congressional Record (pages 9924-9925), were concerned with the proposed extension of Canadian fishing limits and a similar or identical bill previously introduced by Congressman Pelly (H. R. 7815).

FOOD-FOR-PEACE, AND FISH: Administration of 1963 Fishery Amendment to Public Law 480 (Hearing before the Subcommittee on Foreign Agricultural Opera-

tions of the Committee on Agriculture, House of Representatives, 88th Congress, 2nd Session), Serial MM, 34 pp., printed. Contains hearings held February 27, 1964. Included are statements by Congressmen, Federal and State officials, and fishing industry representatives on including fishery products in the food-for-peace program and distributed under Public Law 480, the Agricultural Trade and Development Act of 1954. Would treat fishery products in the same manner as surplus agricultural commodities.

Extension of Public Law 480--Titles I and II (Hearings before the Subcommittee on Foreign Agricultural Operations of the Committee on Agriculture, House of Representatives, 88th Congress, 2nd Session), Serial LL, 192 pp., printed. Contains hearings held February 18, 19, 20, and 28, 1964. Included are statements by Congressmen, Federal officials and public witnesses. Fishery products would be included under Title 1.

FOOD MARKETING NATIONAL COMMISSION: H. J. Res. 1009 (Findley) introduced in the House April 23, 1964, to establish a National Commission on Food Marketing to study the food industry from the farm to the consumer; referred to the Committee on Agriculture. Congressman Findley's remarks in introducing the resolution appear in that day's Congressional Record (pages 8590-8591).

On April 30, 1964, the Senate Committee on Commerce concluded hearings on S. J. Res. 71 on the same subject.

On May 7, 1964, the House Committee on Agriculture held a hearing on H. J. Res. 977, and related bills; testimony was received from Congressmen and public witnesses. On May 11, 1964, the same Committee in executive session ordered reported (H. Rept. No. 1401) favorably to the House H. J. Res. 977 (amended).

On May 12, 1964, the Committee on Commerce reported S. J. Res. 71 to the Senate with amendments, to establish a National Commission on Food Marketing to study the food industry from the farm to the consumer (S. Rept. No. 1022).

HALIBUT WEEK: H. Con. Res. 291 (Hansen) introduced in House on April 22, 1964, requesting the President to proclaim the 6-day period beginning May 18, 1964, and ending May 23, 1964, as National Halibut Week; referred to the Committee on the Judiciary.

INDIAN FISHING RIGHTS: On April 22, 1964, Congressman Westland under an extension of remarks discussed Indian fishing practices and inserted in that day's Congressional Record (Appendix page A2022) a resolution of the Inter-Tribal Council of Western Washington Indians.

INTERIOR APPROPRIATIONS FY 1965: On May 4, 1964, Senator Proxmire submitted two amendments (Nos. 566 and 567), to the Department of the Interior and related agencies appropriation bill (H. R. 10433). Senator Proxmire said his first amendment would reduce the amounts appropriated by the bill as reported from the Senate Appropriations Committee to the House figure or the budget figure, whichever is lower. The second amendment would eliminate all items not provided for in the President's budget. Regarding the Bureau of Commercial Fisheries, the Proxmire amendments would reduce the appropriation for "Management and Investigation of Resources" to \$17,817,900 (not including the transfer of \$2,125,000 from the Pribilof

Islands Fund). The amount proposed by Senator Proxmire is \$15,000 less than the House-passed bill, and \$852,000 less than the amount recommended by the Senate Appropriations Committee. (Congressional Record, May 4, pages 9577-9578.)

LAW OF THE SEA STUDY: H. R. 11232 (Hanna) introduced in the House on May 13, 1964, a bill providing for a study of the legal problems of management, use, and control of the natural resources of the oceans and ocean beds; referred to the Committee on Science and Astronautics. The bill would authorize an appropriation of \$50,000 for a study by the National Science Foundation of the legal problems arising out of the use, management, and control of ocean resources. Congressman Hanna's remarks (Congressional Record of that day, page 10387), pointed out that the proposed bill would authorize a modest sum of money to energize the resources of some of our outstanding legal institutions to provide leadership and guidance in the important field of the law of the oceans.

MARINE MAMMAL PROTECTION: H. R. 5240 (Saylor) introduced in the House March 28, 1963, for the protection of marine mammals on the high seas, and for other purposes. This bill would provide protection, conservation, and management of the polar bear, sea otter, and walrus only. See under heading "Fisheries Legislation" for report of hearings on this subject.

MEDICAL CARE FOR VESSEL PERSONNEL: Medical Care for Self-Employed Seamen (Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 88th Congress, 1st Session), 79 pp., printed. Contains hearings held October 14 and 24, 1963, on H. R. 2108 and related bills. Includes the texts of H. R. 2108, H. R. 2669, H. R. 3338, H. R. 3873, H. R. 7002, and S. 978; reports from various Federal Agencies; and statements of Congressmen, Federal officials, and public witnesses.

MEDICAL CARE FOR VESSEL OWNERS: On April 29, 1964, the Subcommittee on Public Health and Safety of the House Committee on Interstate and Foreign Commerce met in executive session and ordered reported favorably to the full committee H. R. 3873, to amend section 322 of the Public Health Service Act to permit certain owners of fishing boats to receive medical care and hospitalization without charge at hospitals of the Public Health Service.

RESEARCH PROGRAMS: Federal Research and Development Programs (Hearings and Summary of Hearings before the Select Committee on Government Research, House of Representatives, 88th Congress, 1st and 2nd Sessions), Part 1, 724 pp.; and Part 3, 229 pp.; printed. Part 1 contains hearings held Nov. 18, 19, 20, 21, and 22, 1963. Included are statements of various Federal officials, educators, and others. Part 3 contains summary and index of hearings held Nov. 18, 19, 20, 21, and 22, 1963; December 11 and 12, 1963; and held January 22, 1964.

On May 7, 1964, the Subcommittee on Science, Research, and Development of the House Committee on Science and Astronautics held a hearing on the geographical distribution of Federal research and development contracts and grants, and allowance of indirect costs by those doing basic research for the Federal Government. The Science Adviser to the Secretary of the U. S. Department of the Interior testified at the hearing.

STATE DEPARTMENT APPROPRIATIONS FY 1965: On May 4, 1964, the House Committee on Appropriations reported H. R. 11134 (H. Rept. 1374).

H. Rept. 1374, Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriation Bill, Fiscal Year 1965 (May 4, 1964, report from the Committee on Appropriations, House of Representatives, 88th Congress, 2nd Session), 43 pp., printed. Included are funds for the international fisheries commissions. The Committee recommended an appropriation of \$2,000,000 for the international fisheries commissions, the same as the 1964 appropriation, but less than the budget estimate of \$2,139,000.

Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriations for 1965 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, 88th Congress, 2nd Session), 1,287 pp., printed. Contains hearings held on appropriations for the Department of State for fiscal year ending June 30, 1965. Included in Department of State appropriations are funds for the International Fisheries Commissions.

The bill passed the House on May 6. It provides appropriations for the Departments of State, Justice, and Commerce; the Judiciary, and related agencies for the fiscal year ending June 30, 1965, and for other purposes. As approved by the House, the bill appropriates \$2,000,000 for the International Fisheries Commission, the same amount approved for FY 1964, but \$139,000 less than the State Department's budget request.

Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriations for 1965 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, 88th Congress, 2nd Session), 1,046 pp., printed. Includes, among the related agencies, hearings held on appropriations and funds for the Tariff Commission.

TRADE NEGOTIATIONS: On April 29, 1964, Congressman Keith spoke from the floor of the House in a discussion of the possible effects on domestic industry of the forthcoming trade negotiations in Geneva under the General Agreement on Tariffs and Trade--references to the fishing industry were included in his remarks (Congressional Record, pages 9164-9165). The subject on the same day was also discussed from the floor of the House by Congressman Sikes (Congressional Record, pages 9166-9168), and Congressman Tolson (Congressional Record, page 9180). On May 5, 1964, the forthcoming negotiations were discussed from the floor of the Senate by Senator Javits, and included in his remarks were newspaper articles and editorials (Congressional Record, pages 9752-9754).

On May 14, 1964, Congressman Curtis under an extension of remarks discussed (Congressional Record, pages A2519-A2521) items on the agenda of the United Nations' Conference of Trade and Development. The Congressman included an article ("Trade Policies for Development Countries") from the April 1964 issue of the First National City Bank of New York's "Monthly Economic Letter."

TRANSPORTATION ACT OF 1964: S. 2796 (Magnuson et al) introduced in the Senate on May 2, 1964, to provide for strengthening and improving the national transportation system and for other purposes; referred to the Committee on Commerce. Senator Magnuson's descriptive remarks when he introduced the bill appeared in that day's Congressional Record (page 9526).

TRANSPORTATION AMENDMENTS OF 1964: The House Committee on Interstate and Foreign Commerce met on April 23, 1964, in executive session and approved several committee amendments to H. R. 9903, a bill to amend the Interstate Commerce Act and the Federal Aviation Act of 1958 so as to strengthen and improve the national transportation system, and to implement more fully the national transportation policy, and for other purposes. The amendments will be presented on the floor of the House when the bill is considered.

On April 29, 1964, the House Committee on Rules denied a rule and motion for reconsideration filed on H. R. 9903.

VESSEL CONSTRUCTION SUBSIDY AMENDMENTS: On April 27, 1964, Congressman Pelly under an extension of remarks discussed the opposition of the halibut industry to S. 1006, to amend the act of June 12, 1960, for the correction of inequities in the construction of fishing vessels, and for other purposes. Congressman Pelly stated that S. 1006 is opposed by the following organizations: Fishing Vessel Owners Association, Deep Sea Fishermen's Union, Purse Seine Vessel Owners Marketing Association, Fishermen's Cooperative Association, Halibut Producers' Cooperative, and Fishermen's Marketing Association of Washington. (Congressional Record, Appendix page A2075.)

On May 4, 1964, Congressman Bates requested that the Chairman of the House Merchant Marine and Fisheries Committee clear S. 1006 for floor discussion. The Congressman stated that "while he goes along with the gentleman's committee for the extension of the Maritime Act (construction differential), I think it is high time we report out a bill which would equalize these costs with respect to fishermen." The Chairman of the Committee indicated S. 1006 would be acted upon "in the immediate future."

VESSEL MEASUREMENT: S. 2793 (Magnuson) introduced in the Senate on April 30, 1964, to simplify the admeasurement of small vessels; referred to the Committee on Commerce. Introducing the bill, Senator Magnuson remarked that the bill was designed to simplify the admeasurement of small pleasure vessels. (Congressional Record, pages 9361-9364.)

WATER POLLUTION CONTROL ADMINISTRATION: Water Pollution Control Act Amendments (Hearings before the Committee on Public Works, House of Representatives, 88th Congress, 1st and 2nd Sessions), 959 pp., printed. Contains hearings held December 4, 5, 6, 9, and 10, 1963; February 4, 5, 6, 7, 17, 18, and 19, 1964, on S. 649 and companion bill H. R. 3166, and related bills. Included are statements of various Federal, State, and municipal officials, Congressmen, and public witnesses. S. 649 would amend the Federal Water Pollution Control Act, as amended, to establish the Federal Water Pollution Control Administration, to provide grants for research and development, to increase grants for construction of municipal sewage treatment works, to authorize the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate waters.

Senator Metcalf spoke from the floor of the Senate on April 22, 1964, inserting in that day's Congressional Record (pages 8489-8491) an address by Senator Muskie at Duke University, April 16, 1964, on the pending bill S. 649, to amend the Federal Water Pollution Control Act, as amended, to establish the Federal Water Pollution Control Administration, to increase grants for con-

struction of municipal sewage treatment works, to provide financial assistance to municipalities and others for the separation of combined sewers, to authorize the issuance of regulations to aid in preventing, controlling, and abating pollution of interstate, or navigable waters, and for other purposes.

WATER POLLUTION CONTROL AID TO INDUSTRY: H. R. 11021 (St. Onge), introduced in the House on April 23, 1964, to amend the Internal Revenue Code of 1954 to encourage the construction of treatment works to control water and air pollution by permitting the deduction of expenditures for the construction, erection, installation, or acquisition of such treatment works; referred to the Committee on Ways and Means. Congressman St. Onge under an extension of remarks discussed at length the purpose of the bill in that day's Congressional Record (Appendix pages A2053-A2054).

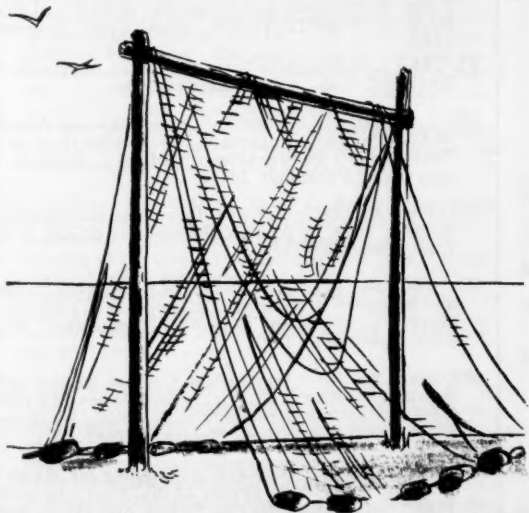
On May 12, 1964, Congressman Dingell under an extension of remarks inserted an article from the May 5, 1954, Detroit News on continuing use of streams and rivers as disposal areas for dangerous chemicals, untreated sewage, and other wastes from construction and industry. (Congressional Record, Appendix pages A2436-A2437.)

WATER RESOURCES COUNCIL: The Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs held a hearing April 20, 1964, on H. R. 3620 and S. 1111, to provide for the optimum development of the Nation's natural resources through the coordinated planning of water and related land resources, through the establishment of a Water Resources Council and River Basin Commission, and by providing financial assistance to the States in order to increase State participation in such planning. Testimony was given by various Federal officials.

BAKED HADDOCK A LA MARITIMES

- | | |
|---|---------------------------------|
| 2 pounds haddock fillets or other fish fillets, fresh or frozen | 1 tablespoon lemon juice |
| 2 cans (4 ounces each) sliced mushrooms, drained | $\frac{1}{4}$ teaspoon salt |
| $\frac{1}{4}$ cup chopped onion | 1 cup soft bread crumbs |
| $\frac{1}{4}$ cup melted fat or oil | 6 slices tomato |
| $\frac{1}{2}$ cup chopped parsley | $\frac{1}{4}$ teaspoon salt |
| 1 egg, beaten | Dash pepper |
| | $\frac{1}{4}$ cup grated cheese |

Thaw frozen fillets. Skin fillets and cut into serving-size portions. Place in a single layer in a well-greased baking dish, 12 x 8 x 2 inches. Cook mushrooms and onion in fat until tender; add parsley. Combine egg, lemon juice, and salt. Brush fish with egg mixture. Top with crumbs. Arrange tomatoes over crumbs; sprinkle with salt and pepper. Spread mushroom mixture over tomatoes. Sprinkle with cheese. Bake in a moderate oven, 350° F., for 35 to 40 minutes or until fish flakes easily when tested with a fork. Serves 6.



This eye-catcher gives a new taste-tempting twist to haddock, a popular favorite, with economy the keyword. Haddock fillets topped with tomato slices, parsley, and cheese provide an appealing array of color to bright-

en both your dinner table and your family's appetites. The mellow magic of mushrooms combined with a hint of onion adds that certain gourmet touch to a seafood meal you'll serve often.

--From Fisheries Marketing Bulletin: "Protein Treasure from the Seven Seas," Issued by the National Marketing Services Office, U. S. Bureau of Commercial Fisheries, Chicago, Ill. 60607.

RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. 20240. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-3384	- Michigan Landings, September 1963, 3 pp.
CFS-3412	- Frozen Fishery Products, January 1964, 8 pp.
CFS-3421	- Alaska Fisheries, 1962 Annual Summary, 8 pp.
CFS-3436	- Maine Landings, December 1963, 4 pp.
CFS-3441	- Michigan Landings, December 1963, 3 pp.
CFS-3443	- California Landings, November 1963, 4 pp.
CFS-3444	- New Jersey Landings, January 1964, 3 pp.
CFS-3445	- Washington Landings, 1963 Annual Summary, 2 pp.
CFS-3446	- Louisiana Landings, January 1964, 3 pp.
CFS-3447	- Rhode Island Landings, December 1963, 3 pp.
CFS-3448	- Shrimp Landings, October 1963, 8 pp.
CFS-3449	- Pacific Coast Fisheries, 1962 Annual Summary, 6 pp.
CFS-3452	- Wisconsin Landings, January 1964, 2 pp.
CFS-3453	- Canned Fishery Products, 1963 Annual Summary, 18 pp.
CFS-3454	- Industrial Fishery Products, 1963 Annual Summary, 9 pp.
CFS-3455	- Packaged Fishery Products, 1963 Annual Summary, 5 pp.
CFS-3456	- California Landings, December 1963, 4 pp.
CFS-3457	- New York Landings, January 1964, 4 pp.
CFS-3458	- Mississippi Landings, December 1963, 3 pp.
CFS-3461	- Maryland Landings, January 1964, 3 pp.
CFS-3464	- Virginia Landings, January 1964, 3 pp.
CFS-3468	- Breaded Shrimp, October-December 1963, 2 pp.
CFS-3480	- Florida Landings, February 1964, 8 pp.

Wholesale Dealers in Fishery Products (Mississippi River and Tributaries) (Revised):

- SL-34 - Wisconsin, 1962, 2 pp.
SL-35 - Illinois, 1962, 2 pp.
SL-38 - Missouri, 1962, 2 pp.

SL-39 - Tennessee, 1962, 2 pp.

Sep. No. 704 - Shrimp Explorations Off Vancouver Island (British Columbia) by M/V John N. Cobb, October-November 1962.

FL-550 - Edible Crabs of the United States, by George H. Rees, 20 pp., illus., December 1963. Discusses natural history--molting and growth, reproduction and development, and autotomy and regeneration of lost legs; Atlantic and Gulf coast crabs--blue, stone, rock and Jonah, green, deep-sea red, and Samoan crabs; Pacific and Alaska crabs--Dungeness, king, and Tanner crabs; and Hawaiian crabs--Kona and other species of crabs.

FL-554 - Spiced and Pickled Seafoods, by Norman D. Jarvis, 19 pp., October 1963. Reviews the history of the use of fishery products preserved with vinegar and spices, and defines the term "pickled." Discusses preservative action of ingredients and requirements for those ingredients. Includes recipes for the preparation of spiced and pickled herring, salmon, mackerel, haddock, sturgeon, oysters, and shrimp.

FL-564 - Parasite of Freshwater Fish. I--Fungi, 1--Fungi (Saprolegnia and Relatives) of Fish and Fish Eggs, by Glenn L. Hoffman, 6 pp., illus., December 1963.

FL-565 - Lymphocystis Disease of Fish (Revised), by Ken Wolf, 4 pp., illus., January 1964.

SSR-Fish, No. 449 - Distribution and Relative Abundance of Commercially Important Pandalid Shrimps in the Northeastern Pacific Ocean, by Lael L. Ronholt, 32 pp., illus., December 1963.

SSR-Fish, No. 454 - Fur Seal Investigations, Pribilof Islands, 1962, by Alton Y. Roppel and others, 107 pp., illus., December 1963.

SSR-Fish, No. 458 - Movements of King Crabs Tagged and Released in Shumagin Islands Area, 1957-62, by Murray L. Hayes and Donald T. Montgomery, 10 pp., illus., December 1963.

SSR-Fish, No. 461 - Winter-Run Chinook Salmon in the Sacramento River, California, with Notes on Water-Temperature Requirements at Spawning, by Daniel W. Slater, 14 pp., illus., November 1963.

SSR-Fish, No. 463 - Exploratory Fishing for Maine Herring, by Keith A. Smith, 12 pp., illus., December 1963. Exploratory herring fishing operations were

carried out along the Maine coast during the summers of 1955 and 1956 using the research vessel Theodore N. Gill and the chartered small otter trawler Metacomet. The coastal and Gulf of Maine waters were sounded and fished with a lampara seine, gill nets, midwater trawls, and other trawls. Inshore explorations located zero-year-class herring in the bays and inlets and traced their development in those areas until they became sardine-sized fish in late fall. Sardine-sized and large herring were found occupying an ocean-bottom habitat during the winter. A scattering of large unschooled herring was found in coastal waters during the summer of 1956.

SSR-Fish. No. 471 - Acute Oral Toxicity of 1,496 Chemicals Force-Fed to Carp, by Howard A. Loeb and William H. Kelly, 127 pp., September 1963.

SSR-Fish. No. 474 - Publications on Fish Parasites and Diseases, 330 B. C. -A. D. 1923, by E. A. McGregor, 86 pp., 1963.

SSR-Fish. No. 475 - Pelagic Fur Seal Investigations, Alaska Waters, 1962, by Clifford H. Fiscus, Gary A. Baines, and Ford Wilke, 63 pp., illus., January 1964.

SSR-Wildlife No. 79 - Comprehensive Bibliography of Zostera marina, by Ronald C. Phillips, 38 pp., January 1964. A bibliography on eelgrass.

Bureau of Commercial Fisheries Biological Laboratory, Galveston, Texas, by George A. Rounsefell, Circular 154, 31 pp., illus., printed, November 1963. Discusses the history of the laboratory, climate and recreation, research problems in the Gulf of Mexico, laboratory site, facilities, and publications by staff members.

Monofilament Gill Net Fishing for Skipjack Tuna in Hawaiian Waters 1961-62, by Richard S. Shomura, Circular 170, 25 pp., illus., October 1963. Gill-netting techniques for catching skipjack tuna were investigated in 1961 and 1962, with the joint support of the State of Hawaii and the U. S. Bureau of Commercial Fisheries. The study was carried out by the Bureau personnel on a chartered skipjack vessel from July 23 to September 29, 1961, and May 9, to August 25, 1962. Results indicated that the monofilament gill-net method of fishing will not supplant nor effectively supplement the present pole-and-line method of catching skipjack tuna.

The Northern Fur Seal, by Ralph C. Baker, Ford Wilke, and C. Howard Baltzo, Circular 169, 26 pp., illus., September 1963. Discusses early history of fur sealing in the North Pacific, distribution and movement of seals, food, physical characteristics, reproduction, and mortality and disease. Also covers population, management, research, sealing activity on the Pribilof Islands, and processing and sale of fur seal skins.

The Soft-Shell Clam, by Robert W. Hanks, Circular 162, 19 pp., illus., December 1963. Describes the soft-shell clam industry of the Atlantic coast; reviews past and present economic importance, fishery methods, fishery management programs, and special problems associated with shellfish culture and marketing. Discusses economic losses suffered because of destruction of soft-shell clams by green crabs and other predators, and devices used to control them. Provides a summary of soft-shell clam natural

history including distribution, taxonomy, anatomy, and life cycle.

A Survey of Japanese Research on Shellfisheries and Seaweeds, by John B. Glude, Circular 168, 22 pp., illus., January 1964. Presents observations made on a trip to Japan in July 1958 to explore the status of shellfishery research, to locate sources of scientific information that might be of value to United States biologists, and to encourage international exchange of such scientific information. Discusses facilities for fisheries research; and research work conducted on oysters, clams, pearl oysters, scallops, abalones, shrimp, spiny lobsters, and seaweeds.

Trout Feeds and Feeding, by Arthur M. Phillips, Jr., A. V. Tunison, and George C. Balzer, Circular 159, 41 pp., October 1963.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, February 1964, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, March 1964, 13 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6317, Pt. Loma Station, San Diego, Calif. 92100.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 1964, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va., 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--February 1964, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries,

Monthly Summary, March 1964, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels as reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ADRIATIC SEA:

Fishes of the Adriatic, by T. Soljan, OTS 60-21661, 431 pp., illus., printed, 1963, \$4.25. (Translated from the Serbo-Croatian, *Fauna et Flora Adriatica*, Volumen 1, *Pesces*.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20235.

ALGAE:

Ecology of Floating Algal Communities in Florida, by Ronald C. Phillips, Contribution No. 76, 6 pp., printed. (Reprinted from *Quarterly Journal of the Florida Academy of Sciences*, vol. 26, no. 4, December 1963, pp. 329-334.) Marine Laboratory, Florida State Board of Conservation, Maritime Base, St. Petersburg, Fla.

The Occurrence of *GELIDIELLA TENUISSIMA* Feldm. et Hamel in Puerto Rico, by Hugo L. Blomquist and Luis R. Almodovar, 3 pp., illus., printed. (Reprinted from *Nova Hedwigia*, vol. III, no. 1, 1961, pp. 67-69.) Institute of Marine Biology, University of Puerto Rico, Mayaguez, Puerto Rico.

AMINO ACIDS:

"A Comparative Study of Amino Acids in the Muscle of Different Species of Fish," by Olaf R. Braekkan and Gjermund Boge, article, *Fiskeridirektoratets Skrifter, Serie Teknologiske Undersokelser*, vol. 4, no. 3, 1962, pp. 1-19, printed. Fiskeridirektoratets, Bergen, Norway.

ANTIBIOTICS:

"Antibiotic Properties of Micro-Organisms Isolated from Various Depths of World Oceans," by E. N. Krasil'nikova, article, *Microbiology*, vol. 30, March-April 1962, pp. 653-791, printed. (Translated from the Russian, *Mikrobiologiya*, vol. 30, September-October 1961, pp. 653-791.) American Institute of Biological Sciences, 2000 P St. N. W., Washington, D. C. 20006.

ANTIOXIDANTS:

"The Antioxidant Effects of Sodium Tripolyphosphate and Vegetable Extracts on Cooked Meat and Fish," by Margaret B. Ramsey and Betty M. Watts, article, *Food Technology*, vol. 17, August 1963, pp. 102-105, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

BAIT:

"Study on the Bait for Fishing. II--Efficiency of Chum Mixed with Starch Dregs for Mackerel Fishing," by Takeo Koyama and Takashi Kaneda, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 28, October 1962, pp. 979-984, printed. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

BARNACLES:

Mechanism of Antifouling Action in Shipbottom Paints, by Charles E. Lane and Francis J. Bernard, Final Report, 6 pp., processed, January 1964. The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

BIOCHEMISTRY:

"Chemical Studies on the Red Muscle (Chai) of Fishes. XIII--Alkali Resistibility of Hemoglobin and Myoglobin," by Fumio Matsuura and Kanehisa Hashimoto, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 28, February 1962, pp. 201-209, printed. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

BRAZIL:

Pesca--1962, Estrutura e Producao (Fishing Industry, 1962, Structure and Production), 45 pp., processed in Portuguese, January 1964. Ministerio da Agricultura, Departamento Economico, Servico de Estatistica da Producao, Avenida Pasteur no. 404, Terreo, Rio de Janeiro, Brazil.

CALIFORNIA:

California Fish and Game, vol. 50, no. 2, April 1964, 67 pp., illus., printed, single copy 75 cents. Documents Section, P. O. Box 1612, Sacramento, Calif. 95807. Includes, among others, articles on: "Annual Abundance of Young Striped Bass, *Roccus saxatilis*, in the Sacramento-San Joaquin Delta, California," by Harold K. Chadwick; "Some Observations on Factors Associated with Survival of Striped Bass Eggs and Larvae," by Arnold B. Albrecht; and "Northward Movement of the California Sea Otter," by Robert T. Orr and Thomas C. Poulter.

CANADA:

"Canadian Fisheries in 1963," article, *Trade News*, vol. 16, no. 8, February 1964, pp. 5-8, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Events of national importance were the announcement of a 12-mile exclusive fishing zone along the entire Canadian coastline to become effective in May 1964; the admission of Japanese vessels to the halibut fishery of eastern Bering Sea and the herring fishery west of the Queen Charlottes; and upward revision of protection for Canadian owners of small vessels under the Fishermen's Indemnity Plan. In the Atlantic fisheries 1963 was a year of strong capital expansion, especially in the freezing industry, with emphasis on a changeover from export of raw ma-

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terials to increased manufacture of items fully processed in Canada. In the Maritime Provinces the catch has grown in value from just under C\$39 million in 1961 to almost C\$50 million in 1963. Newfoundland fishermen had a year of unprecedented prosperity. In relation to the fishermen's over-all income, good results and prices in the herring fishery of British Columbia made up for the sluggish market for halibut; but nothing could write off their summer loss in salmon and they closed the year with earnings nearly C\$9 million smaller than in 1962. Fresh-water fisheries continued at the high level of prosperity established in 1962 until very hot July weather caused a scarcity of ice on the prairies; a long warm fall left many lakes suspended for weeks between the end of open-water fishing and the delayed start of ice fishing; and a botulism scare in the United States caused the market to collapse.

Fisheries Statistics British Columbia, 1962, 16 pp., illus., printed in French and English, 50 Canadian cents, March 1964. Queen's Printer and Controller of Stationery, Ottawa, Canada. Contains data on quantity and value of fishery products by species, British Columbia, 1950-62; quantity and value by species and fisheries districts, 1961-62; capital equipment employed in primary fisheries operations, 1961-62; and number of persons engaged in primary fisheries operations, 1961-62.

Office Consolidation of the British Columbia Fishery Regulations Made under the Fisheries Act, Cat. No. Fa4-12/1962, 51 pp., printed, 1962. Queen's Printer and Controller of Stationery, Ottawa, Canada. Regulations covering commercial and sport fishing in tidal and non-tidal waters of British Columbia, except for Canadian national parks.

CAVE FISH:

"Adaptations of Cave Fish," article, *New Scientist*, vol. 21, no. 376, January 30, 1964, p. 290, printed, single copy 1s. 3d. (about 20 U.S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

CLAMS:

Razor Clams, Educational Bulletin No. 4, 13 pp., illus., printed, 1963. Fish Commission, 307 State Office Bldg., 1400 SW. 5th Ave., Portland, Oreg., 97201. Discusses the life history of the razor clam--distribution, description, reproduction and growth, and food habits; digging razor clams--tides, tools and equipment, locating them, and digging; preparing clams for the table--cleaning and cooking razor clams; and regulations for digging.

"Wire Belt Harvests Clams," article, *Food Processing*, vol. 24, July 1963, 59 pp., printed. Putnam Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

COD:

"Merking av Rusefanget Torsk i Omradene Smola-Helgeland" (Tagging of Trap-Net-Caught Cod in the Areas of Smola-Helgeland), by Arvid Høyen, article, *Fiskets Gang*, vol. 50, no. 5, January 30, 1964, pp. 87-93, illus., printed in Norwegian with English summary. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

COLOMBIA:

Foreign Trade Regulations of Colombia, by Gary D. Adams, OBR-64-3, 8 pp., printed, January 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A report of value to businessmen interested in import-export trade with Colombia. In general, Colombia's foreign trade policy is designed to preserve foreign exchange for the importation of capital goods and other items considered essential for economic development, to protect emerging national industries from foreign competition, and to obtain revenue for the government. The report discusses the import tariff system, sales and other internal taxes, documentation and fees, labeling and marking requirements, and special customs provisions. It also includes information on nontariff import trade controls, Colombia's export controls, United States export and import controls, and diplomatic representation between the two countries.

COMMISSIONS:

(Atlantic States Marine Fisheries Commission) Twenty-Second Annual Report 1962/63 (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 48 pp., printed. Atlantic States Marine Fisheries Commission, 336 E. College Ave., Tallahassee, Fla. Includes condensed reports of proceedings of the Annual Meeting of the Commission, on the work of the Commission, various committees, and the four section meetings. The North Atlantic Section reports on Soviet fisheries activities off United States coasts, shellfish inspection and purification projects, and destruction of estuarine habitats. The Middle Atlantic Section discusses marsh productivity studies in Delaware River, and size limits for catches of fluke and hard clams. The Chesapeake Bay Section covers oyster mortalities and rehabilitation program, striped bass and menhaden programs, and shellfish sanitation program. The South Atlantic Section covers shrimp marking and statistical studies, pollution of oyster beds, and exploitation of calico scallop resources. Also included are an address on "Legislation and Resources Conservation," agenda of the Twenty-Second Annual Meeting, and report on financial statements.

CONSERVATION:

Federal Aid in Fish and Wildlife Restoration (Annual Report on Dingell-Johnson and Pittman-Robertson Programs for the Fiscal Year Ending June 30, 1962), 86 pp., processed, 1963. Sport Fishing Institute, Bond Bldg., Washington, D. C. Presents a short program review of expenditures and projects operated during FY 1962, and statistical tables giving data on individual projects, land purchases, hunting and fishing licenses issued by the states, and other pertinent information.

The Race for Inner Space, 39 pp., illus., printed, 1964, 55 cents. Division of Information, Office of the Secretary, U. S. Department of the Interior, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A special report to the Nation dramatizing

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the loss or abuse of areas ideally suited for public use. Contains more than 80 photos that help tell the story of the Department of the Interior's renewed efforts to preserve and provide more outdoor enjoyment for this Nation's growing population and to utilize wisely the total resource environment, ranging from fish and wildlife to minerals and forests. The Bureau of Sport Fisheries and Wildlife asks Americans to "stem the advancing sheet of chemicals and concrete" in its chapter "On Behalf of Our Fellow Creatures." The Bureau of Commercial Fisheries points out the necessity "to harness the seas so that the land and its inhabitants may prosper." The short history of the Bureau of Outdoor Recreation is told in a chapter, "Birth of a Bureau." The Bureau of Reclamation's section, "Build a Better Water Trap," shows how a trickle of visitors to reservoirs has grown to a steady stream. The Bureau of Land Management's contribution, "466 Million Acres in the Bank," tells the story of "the race between preservation and abuse," on the public lands. The Bureau of Mines and of Indian Affairs, the Office of Territories, and the Geological Survey add their contributions to an overall view of what is happening to the earth's space and its occupants.

CRABS:

Yorkshire Crab Investigations 1962, Laboratory Leaflet (New Series) No. 3, 14 pp., illus., processed, May 1963. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Burnham-on-Crouch, Essex, England.

DENMARK:

Fiskeriberetning for Aret 1962 (The Ministry of Fisheries Annual Report for 1962), 132 pp., illus., printed in Danish with English resume, Kr. 7.50 (about US\$1.10). Fiskeriministeriet, 1 Kommission Hos, G.E.C. Gad, Copenhagen, Denmark. Includes information and statistical tables on number of fishermen employed, fishing vessels and gear, and landings of fish and shellfish. Also contains information on trout farms; production of canned, filleted, and smoked fish; and foreign trade in fishery products.

Regulation of the Fisheries in Danish Waters, by Erik Ursin, 10 pp., processed, 1964. (Translated from the Danish, Fiskeriaarbogen, 1963.) Danmarks Fiskeriog Havundersogelser, Charlottenlund, Denmark. (A limited number of copies of the translation are available from the United States Embassy, Copenhagen, Denmark.) The aims of fishery regulation may be either to increase total landings in the ports or to increase the individual vessel's landings. If the fisheries are regulated with a minimum size-limit, these rules must be followed if the stock is to be utilized in the best way: (1) A definite minimum size-limit corresponds to the number of vessels; and (2) The more cutters, the higher the minimum size-limit. Methods to regulate a fishery include ways to restrict the fishery effort--controlling the number of vessels, prohibiting fishing at certain times of the year; and ways to protect the young--minimum size-limit regulations, mesh-size control. Other methods of regulating a fishery are preservation of roe fish and transplanting of young fish to better places for growth. Other topics discussed are difficulties with predatory fish, economics of catchability, and natural

variations in the stock. It is impossible to protect all stocks equally, states the author.

ECOLOGY:

Freshwater Ecology, by T. T. Macan, 348 pp., illus., printed, 1964, \$6.50. Longman, Green and Co., Ltd., 6-7 Clifford St., London W1, England.

ECUADOR:

"Apuntes e Informaciones sobre las Pesquerias en la Provincia de El Oro" (Memoranda and Information on the Fisheries in the Province of El Oro), by Raul Jaramillo del Castillo, Pedro Valverde A., and Domingo Quiroga, article, Boletin Informativo, vol. 1, no. 1, December 1963, pp. 1-30, illus., printed in Spanish. Instituto Nacional de Pesca del Ecuador, Guayaquil, Ecuador.

Labor Law and Practice in Ecuador, BLS Report No. 242, 45 pp., illus., printed, February 1963, 35 cents. Bureau of Labor Statistics, U.S. Department of Labor, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Discusses Ecuador's geographic setting, manpower resources, culture and customs, education and health, and government in relation to labor. Also covers industrial relations; pay and allowances; hours of work and premiums; safety, facilities, and insurance; and employment practices. Included are statistical tables showing data on economically active population, by economic sector, sex, occupation, age, and geographic area; number of schools and enrollment, by type of school; and other similar information.

FAROE ISLANDS:

Faroes in Figures, no. 23, September 1963, 7 pp., illus., printed. Foroya Fiskasola, Torshavn, Faroe Islands. Includes an article on "Development of the Faroese Fishing Fleet," financial statement of the Faroese Fishing Vessel Mortgage Finance Corporation, and statistical tables on export and production of saltfish and dried cod.

Faroes in Figures, no. 24, December 1963, 7 pp., illus., printed. Foroya Fiskasola, Torshavn, Faroe Islands. Presents an article, "Loan and Deposits of the Faroese Monetary Institutions," which includes information on renewal of the fishing fleet, export of fishery products, debenture and loans secured on fishing vessels, and other topics. Also contains statistical tables on export and production of saltfish, dried cod, and frozen fish fillets.

Faroes in Figures, no. 25, March 1964, 7 pp., illus., printed. Foroya Fiskasola, Torshavn, Faroe Islands. Presents an article, "The Economic Development in the Faroes in 1963," which includes information on landings and exports of fishery products, status of the fishing fleet, and other topics. Also contains statistical tables on export and production of saltfish, dried cod, and frozen fish fillets.

FISH BEHAVIOR:

Effect of Constant Magnetic Field on Conditioned Reflexes in Sea Fish, by Yu. A. Kholodov and G. L. Verevkina, 15 pp., illus., printed, 50 cents, December 1963. (Translated from the Russian, Biologiya Belogo

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Morya, vol. 1, 1962.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 20235.

Formation of Conditioned Reflex Responses to Magnetic Field in Fish, by Yu. A. Kholodov, P-190, 15 pp., printed, January 1964, 50 cents. (Translated from the Russian, Trudy Soveshchaniya po Fiziologii Ryb Akademii Nauk SSSR, no. 8, 1958.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20235.

FISH FARMING:

"Farming under the Sea," by William Reed, article, Current Affairs Bulletin of the Indo-Pacific Fisheries Council, vol. 36, April 1963, pp. 12-14, printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Regional Office, Bangkok, Thailand.

FISH FAT:

"Component Glycerides of an Indian Fresh-Water Fish Fat," by S. P. Pathak and B. R. Reddy, article, Journal of the Science of Food and Agriculture, vol. 14, June 1963, pp. 395-398, printed. The Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Fat in Some Teleost Fish," by Wincenty Kilarski, article, Acta Biologica Cracoviensia Serie Zoologie, vol. 3, no. 1, 1960, pp. 23-27, printed. Biologica Cracoviensia Serie Zoologie, Polska Akademia Nauk, Komisja Biologiczna, Krakow, Poland.

FISH FINDER:

Fish-Finding with Sonar, 85 pp., illus., printed, 1964. Simrad, Simonsen Radio A. S. Oslo, Norway. (Available through Simrad distributors and agents throughout the world.) Locating fish with some type of device has been a fishermen's dream, but in recent years that dream has become reality. There are a number of different types of fish-finders now on the market. This particular book deals with the use of sonar in locating fish. It is the first book written in English on the theory and practice of finding fish with sonar. This written guide will do much to aid any fisherman or biologist in using sonar effectively. Written in simple terms, it deals with the basic elements of sonar and goes on to discuss its practical uses. It seeks to acquaint operators of sets with the elementary principles of physics that are involved as well as with the basic operations of the set. The chapters in the little book include discussions of elementary acoustics, some notes on elementary oceanography, how sonar functions, classification of a sonar echo, search methods, and practical applications. A team of internationally known experts wrote the book: Finn Devold, head of the herring investigations at the Marine Research Institute, Bergen, Norway; Lars Middtun, an oceanographer; and Gudmund Vestnes, an experienced commercial sonar operator (more than 30,000 hours). It is well illustrated with diagrams, drawings, and sample echograms. Finn Devold in the introduction says: "The book should be found not only wherever courses in sonar are conducted, but also aboard every vessel that is, or some day may be, equipped with sonar."

--Joseph Pileggi

FISH PROTEIN CONCENTRATE:

"Factors Influencing the Nutritional Value of Fish Flour. III--Further Studies on Availability of Amino Acids," by A. B. Morrison, article, Canadian Journal of Biochemistry and Physiology, vol. 41, July 1963, pp. 1589-1594, printed. National Research Council, Sussex St., Ottawa 2, Canada.

FISHWAYS:

Pool-Type Fishways--Biological Aspects in Their Construction, by Stanislaw Salowicz and Stanislaw Zarnecki, OTS 60-21496, 139 pp., illus., printed, \$1.50, 1962. (Translated from the Polish, Roczniki Nauk Rolniczych, vol. 69, ser. D, 1954, pp. 5-171.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 20235. Discusses in detail types of fishways: fishways in Central European rivers; fishways on Scottish rivers; design of fishways--placement, the approach, the outlet (fish entrance), guiding screens, the inlet (fish exit), route of the fishway, pool structure, weirs between pools, openings in weirs between pools, drop between pools, illumination, protective screens, control fyke nets, building nets, water discharge, and attracting water.

FLORIDA:

Review of Recent Progress in Departmental Marine Research, edited by Robert M. Ingle, Special Scientific Report No. 7, 14 pp., processed, December 31, 1963. Marine Laboratory, The Florida State Board of Conservation, Maritime Base, St. Petersburg, Fla. Reports on accomplishments of the Salt Water Fisheries Division in research projects in shellfish nutrition, shellfish purification, fisheries plankton studies, spiny lobster studies, fish tagging and other finfish studies, shrimp investigations, exploratory fishing, ecological studies, and various phases of red tide investigation. A report on "Scientific and Practicable Conversion of Marine Trash Materials into Composts and Fertilizers" is also included.

FOOD TECHNOLOGY:

Food Technology the World Over, vol. 1--Europe, Canada and the United States, Australia, edited by Martin S. Peterson and Donald K. Tressler, 540 pp., illus., printed (1963), \$15 (foreign \$16). The Avi Publishing Company, Inc., P. O. Box 388, Westport, Conn. The first of two volumes describing the technologies of the more highly-industrialized nations. Volume 1 is the work of many writers, each of whom is closely acquainted with the particular nation's food industry and technology. There are five parts. Parts 1 and 2, food manufacturing around the world and technological determinants in the evolution of the modern highly-mechanized food industry, provide orientation for the succeeding three parts. Parts II, IV, and V deal, respectively, with the technologies of selected nations of Europe (Denmark, France, Western Germany, the Netherlands, Sweden, United Kingdom, and the Union of Soviet Socialist Republics), of Canada and the United States, and of Australia. Tables and map in Part I present many facets of the world food picture (amount processed, world trade, number of factories, etc.) in interesting detail. Part III offers a broad view of the structure of food technology in Europe--its engineering, scientific, and technological supporting programs, distribution facilities, and background information on the national food economy and the nutritional status of its populations. Part IV

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deals directly with the food technology in Canada and the United States. Part V presents the story of Australia's energetic attack on problems inherent in her food economy and geography. Modest bibliographies contain carefully selected references.

--Frank T. Fisher

FREEZE-DRYING:

Freeze-Drying: Cost Projection, by Kermit Bird, Marketing Research Report No. 639, 37 pp., illus., processed, January 1964. Marketing Economics Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. 20250.

Selected Writings of Freeze-Drying of Foods, by Kermit Bird, ERS-147, 54 pp., illus., processed, January 1964. Marketing Economics Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. 20250.

FRESH-WATER FISH:

"Notes on the Distribution of Freshwater Fishes," by L. F. de Beaufort, article, *Copeia*, no. 1, March 26, 1964, pp. 60-65, illus., printed. American Society of Ichthyologists and Herpetologists, 18111 Nordhoff St., Northridge, Calif.

GEAR:

"The Lake Erie Gear Development Project--1959," A. W. Lantz, article, Progress Reports of the Biological Station and the Technological Unit, Fisheries Research Board of Canada, no. 2, May 1961, pp. 5-14, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

A Simple Integrating Depth Recorder, by B. V. Hamon, D. J. Tranter, and A. C. Heron, Collected Reprint 498, 3 pp., illus., printed. (Reprinted from Deep-Sea Research, vol. 10, 1963, pp. 457-458.) Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Organization, 314 Albert St., East Melbourne C2, Victoria, Australia.

GENERAL:

"Food and Agriculture in 1984: The Race Will Not Yet Be Won," by R. B. Sen; "Farming as a Science-Based Industry," by William Slater; "Beware the Malnutrition of Affluence," by John Yudkin, articles, New Scientist, vol. 21, no. 376; January 30, 1964, pp. 270-273, illus., printed, single copy 1s. 3d. (about 20 U. S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England. A symposium on the subject of accomplishments to be expected in the fields of food and agriculture within the next 20 years. Factors which must be considered in estimating what may be achieved are: (1) the effect of technical progress on crop and livestock yields; (2) the effect of rising population on the intensity of cultivation which in turn affects crop and livestock yields; and (3) the possibility of increasing production through the development of new land resources. Agricultural resources can be supplemented by a very great increase in the production of fish. If, by 1984, the less developed countries can double their agricultural output, they will be ready to move into a more advanced form of agriculture with larger units and mechanization in the remaining years of the century, and so meet the needs of the greater population increase which is expected by 2000 A. D. By 1984,

it is probable that scientists will have enough information about the factors which determine food choice to ensure that they know how to bridge the gap between wide food availability and appropriate consumption.

GERMAN FEDERAL REPUBLIC:

Die Versorgung mit Fischen, Schal- und Krustentieren in der Bundesrepublik in den Wirtschaftsjahren 1959/60 bis 1961/62. Teil I--Versorgungsbilanzen (The Supply of Fish, Shellfish, and Crustacea in the Federal Republic during Fiscal Years 1959/60 through 1961/62. Part I--Balance of Supply), by Otto Bauer; Teil II--Verbrauch und Nährwertzusammensetzung (Part II--Consumption and Composition of Nutritional Value), by Willi Wirths, 28 pp., illus., printed in German. (Reprinted from Berichte über Landwirtschaft, vol. 41, no. 4, 1963, pp. 741-768.) Verlag Paul Parey, Spitalerstrasse 12, 2000 Hamburg 1, Germany.

GRADING:

"Fresh-Water Fish Grading Equipment," by A. W. Lantz, article, Progress Reports of the Biological Station and the Technological Unit, Fisheries Research Board of Canada, no. 2, May 1961, pp. 53-56, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

HALIBUT:

Pacific Halibut Fishery Regulations (Effective March 18, 1964), 13 pp., printed. International Pacific Halibut Fishery Commission, Fisheries Hall No. 2, University of Washington, Seattle 5, Wash. The regulations for the North Pacific halibut fishery were published in conformity with the Pacific Halibut Fishery Convention between the United States and Canada, signed March 2, 1953. The new regulations cover the regulatory areas; length of halibut fishing seasons; closed seasons; catch limits in Areas 2, 3A, 3B South, and 3B North Triangle; size limits; licensing of vessels; retention of halibut taken under permit; conditions limiting validity of permits; and statistical return by vessels. They also concern statistical return by dealers; dory gear prohibited; retention of halibut taken by nets; retention of tagged halibut; responsibility of master; supervision of unloading and weighing; sealing of fishing equipment; and previous regulations superseded.

HERRING:

"Change of the Fact Factor in White Sea Herring in Connection with the State of the Sexual Products," by G. A. Bogdanov, article, Chemical Abstracts, vol. 57, October 29, 1962, 11685g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

"Småsild- og Feitsildtokt med F/F G.O. Sars i Tiden 15 September til 10 Oktober 1963" (Small Herring and Fat Herring Exploratory Cruise on Board R/V G. O. Sars between September 15 and October 10, 1963), by Olav Dragesund, article, Fiskets Gang, vol. 50, no. 3, January 16, 1964, pp. 48-53, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

INDIA:

Fish Technology News Letter, vol. IV, no. 4, January 1964, 12 pp., processed. Central Institute of Fisheries Technology, Ernakulam, India. Includes, among others, "Canning of Tuna in Oil;" "Sampling of Frozen

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Fish Products;" "Fishery Products of Commerce. I--Shark Fins;" "Pasteurization of Peeled Prawns;" "Salmonella Organisms in Fish Meal;" and "A Comparative Account of the Rotting Resistance of Netting Twines of Vegetable Origin."

INSULIN:

"Studies on Insulin. III--On the Structure of the Alanine Chain of Bonito Insulin," by Akira Kotaki, article, *Journal of Biochemistry*, vol. 51, April 1962, pp. 301-309, printed. Charles E. Tuttle Co., 28-30 Somain St. Rutland, Vt.

INTERNATIONAL COMMISSIONS:

(International North Pacific Fisheries Commission) *Proceedings of the Tenth Annual Meeting*, 1963, 254 pp., illus., processed, February 28, 1964. International North Pacific Fisheries Commission, 6640 NW Marine Dr., Vancouver 8, B.C., Canada. Presents the minutes of sessions and committee reports of the meeting held at Vancouver, Canada, November 18-23, 1963, and summary minutes of an informal session of the Commission held in Tokyo, Japan, on October 4, 1963.

ISRAEL:

Bamidgeh, vol. 15, no. 4, December 1963, 32 pp., illus., printed. *Bamidgeh*, Nir-David D.N., Israel. Contains these articles: "Current Problems in Fish Culture," by S. Tal; "Fisheries and Fish Culture in Israel in 1962," by S. Sarig; and "Ten Years of Research in Fish Ponds Fertilization in Israel. 2--Fertilizers Dose and Frequency of Fertilization," by B. Hepner.

JAPAN:

Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, no. 10, October 1963, 77 pp., illus., printed in Japanese with English abstracts. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan. Contains, among others, articles on: "Granographical Life Record Curve Method for Identifying Each Stock of Pelagic Fishes. V--Identification of Sardine Stocks in Coastal Waters of Hokkaido," by Hideaki Yasuda, Kichie Kaga, and Ryosuke Hayano;" VI--Identification of Sardine Stocks in the Pacific Coast of Honshu and Kyushu," by Hideaki Yasuda and Kazuhiko Minowa; "Experimental Use of Fish Pumps in Various Phases of Fisheries. III--Causes for Damage of Shellfish Collected by Pumping," by Yozo Tawara and others. "Fish Schools Attracted by Light Stimuli Observed in the Operation of Hasso-Ami or Eight-Boat-Lift-Net," by Makoto Inoue; "Spawning Experiments of the Common Squid, *Ommastrephes sloani pacificus* Steenstrup in an Indoor Aquarium," by Mototsugu Hamabe; and "Feed Efficiency of Fish Meal. I--Relation between Oxidation and Feed Efficiency of Fish Meal; II--Digestibility of Fish Meal Treated with Various Solvents," by Kuman Saruya and others.

Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, no. 11, November 1963, 98 pp., illus., printed in Japanese with English abstracts. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, articles on: "Studies on Reproduction of Rainbow Trout, *Salmo gairdneri*, with Special Reference to Egg Taking.

V--Development of Gonads and Size of Fish Spawning Firstly," by Minoru Nomura; "Serological Identification of Breeding Subpopulations of Fin Whales Taken from the Gulf of Alaska and the West Coast of British Columbia," by Kazuo Fujino; "Manometric Studies on the Respiration of a Marine Alga, *Porphyra tenera*. II--Influence of Some Growth Substances, Nitrogen Compounds and Reappraisal of the Influence by Drying and pH," by Eizi Ogata and Toshio Matsui; "Distribution Pattern of Sharks Along Setline" (in English), by Hiroshi Maeda; "On the Growth Effect of Vitamin A in Fish Liver Oil on Chicken (in English), by Haruo Baba; "Studies of the Effects of Marine Products on Cholesterol Metabolism. I--The Effects of Edible Seaweeds," by Takashi Kaneda, Setsuko Tokuda, and Kimie Arai; and "Discoloration of Lyophilized Fish," by Masamichi Toyomizu, Fusetsu Orita, and Yukio Tomiyasu.

Bulletin of the Japanese Society of Scientific Fisheries, vol. 29, no. 12, December 1963, 130 pp., illus., printed in Japanese and English. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-Kaigandori 6, Minato-Ku, Tokyo, Japan. Contains, among others, these articles: "Catch Pattern of Squids under Lamp, in Relation to Quantity of Catch," by Hiroshi Maeda and Yutaka Nakada; "Identification of Breeding Subpopulations of the Sperm Whales in the Waters Adjacent to Japan and Around Aleutian Islands by Means of Blood Typing Investigations," by Kazuo Fujino; "Behaviour of Sweep Line in Danish Seining. I," by Otohiko Suzuki; "Studies on Bacterial Loan of Fish Container. II--On the Fate of Takikawa's So-Called Pathogenic Halophilic Bacteria Invaded into Materials of Wooden Container; III--Disinfection of Wooden Fish Container Polluted with Takikawa's So-Called Pathogenic Halophilic Bacteria," by Akiya Kurogi.

Fisheries Cooperatives Law, 50 pp., printed in Japanese. Fisheries Agency, Tokyo, Japan.

Fishery Vessel Insurance Statistics, 33 pp., illus., printed in Japanese. Japanese Fishery Agency, Tokyo, Japan.

Fishing Vessels Loss Compensation Law and Related Regulations, 277 pp., printed in Japanese, reprinted July 1963. Fisheries Agency, Tokyo, Japan.

Journal of the Faculty of Fisheries and Animal Husbandry, Hiroshima University, vol. 5, no. 1, December 1963, 278 pp., illus., printed in Japanese and English. The Faculty of Fisheries and Animal Husbandry, Hiroshima University, Fukuyama, Japan. Includes, among others, these articles: "Relationship between Tidal Range and Catch of Pound Net in Kasaoka Bay," by Shumpei Kakuda; "On Four Newly Known Species of Octopoda from Japan," by Iwao Taki; "Note on the Fishing Condition of the Yellow Tail Set Net Fishery in the Tohoku, Tokai and Nankai Sea Regions of Japan," by Sadaichi Nishikawa; and "Chemical Studies on Fish Solubles. I--Vitamin Contents and Amino Acid Composition of Commercial Fish Solubles," by Keiji Ito and Shiro Sato.

Mutual Aid Regulations No. 1--Fire Mutual Aid Regulations, 22 pp., printed in Japanese. National Fisheries Cooperatives Mutual Aid Association, Tokyo, Japan.

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Mutual Aid Regulations No. 2--Welfare Mutual Aid Regulations, 66 pp., printed in Japanese, revised August 1, 1963. National Fisheries Cooperatives Mutual Aid Association, Tokyo, Japan.

Statistic Tables of Fishing Vessels (as of the End of 1962), General Report No. 15, 308 pp., illus., printed in Japanese and English. Japanese Fisheries Agency, Tokyo, Japan. An annual report containing statistical data in detail on the various types of Japanese fishing craft, both powered and nonpowered, as obtained by a fishery registration system. The statistics seem to show that the Japanese fishing fleet has not only restored its prewar status but increased its capacity rapidly after World War II.

LINGCOD:

Glycolysis in Lingcod Muscle during Frozen Storage, by N. Tomlinson, R. E. E. Jonas, and S. E. Geiger, Reprint No. 752, 8 pp., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 20, no. 5, 1963, pp. 1145-1152.) Technological Research Laboratory, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada.

MARINE AIDS:

Light List, vol. 1--Atlantic Coast, St. Croix River, Maine to Little River, South Carolina, 562 pp., illus., printed, 1964, \$3.50. U. S. Coast Guard, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A light list for the northern and central Atlantic Coast of the United States was issued recently by the U. S. Coast Guard. Contains locations of lights, fog signals, buoys, daybeacons, lightships, radio-beacons, and loran stations from St. Croix River, Maine to Little River, South Carolina. Areas covered include the First, Third, and Fifth Coast Guard Districts. Intended to furnish more complete information concerning aids to navigation than can be conveniently shown on charts. Not intended to be used in navigation in place of charts and coast pilots.

MARINE RESOURCES:

"Oceans in 1984: New and Richer Marine Harvests Forecast," by Alister Hardy; "Working Deep in the Sea," by Edwin A. Link; "A Long View from the Beach," by Roger Revelle, articles, New Scientist, vol. 21, no. 379, February 20, 1964, pp. 482-487, illus., printed, single copy 1s. 3d. (about 20 U. S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England. A symposium on the subject of accomplishments to be expected in the development of marine resources within the next 20 years. By 1984, the world's food supply should be greatly increased as a result of the growth of fish-farming facilities and the harvest of krill, a planktonic shrimp, for human consumption. Man will be able to travel to the ocean's depths to work at such tasks as oil drilling, mining, fish culture, or the garnering of undersea crops. Scientists can expect changes in fish populations as the result of warmer ocean currents in some areas; control of weather as a product of increased knowledge of the influence of the ocean's energy potential on the evolution of hurricanes; and even the "taming" of porpoises in consequence of an understanding of their behavior.

MARKETING:

"Fishmen Angle for Two Fridays," article, Business Week, no. 1798, February 15, 1964, pp. 74-75, 77, illus., printed, 50 cents. McGraw-Hill, Inc., 330 W. 42nd St., New York, N. Y. 10036. Currently the fish-and shellfish-processing industry is mounting a campaign to create more appetite for its products. It's counting heavily on improved processing, more "heat and eat" items. There is even a drive on to erase the restrictiveness of the "fish on Fridays" habit. The search for new markets is focused largely on institutions and overseas.

MENHADEN:

Menhaden--Natural Resource from the Pastures of the Sea, 15 pp., illus., printed. Public Relations Branch, Industrial Products Division, National Fisheries Institute, 1614 20th St. NW., Washington, D. C. Describes with the help of many photos, the menhaden; physiological and chemical properties of menhaden meal, oil, and solubles; the menhaden fleet and its operations; processing of the catch at the plants; biological research on this species; uses of menhaden products in feeds, fertilizers, margarine, paints, and other products; and the use of spotter planes in the fishery.

METABOLISM:

"Influence of Environment on the Metabolism of Iodine in Fish," by Cleveland P. Hickman, Jr. (University of Alberta, Edmonton, Canada), article, Chemical Abstracts, vol. 57, October 15, 1962, 10368d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

MEXICO:

Foreign Trade Regulations of Mexico, OBR 64-27, 8 pp., printed, March 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.) Mexico's industries and their domestic markets are protected by high tariffs and import controls. Two exceptions, however, to the restrictive trade policy exist: in the northwest, some industrial and consumer goods are being imported free of duty under special customs provisions; and in regard to other members of the Latin American Free Trade Association, Mexico grants exclusive tariff and trade control preferences. The report discusses Mexico's trade policy, import tariff system, documentation and fees, labeling requirements, and special customs provisions. Also covers nontariff import trade controls, Mexico's export controls, United States foreign trade controls, and diplomatic representation between the two countries.

Labor Law and Practice in Mexico, BLS Report No. 240, 76 pp., illus., printed, November 1963, 45 cents. Bureau of Labor Statistics, U. S. Department of Labor, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Discusses Mexico's geographic setting, manpower resources, culture and customs, education and health, and government in relation to labor. Also covers industrial relations; pay and allowances; hours of work and premiums; safety,

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insurance, and services; and employment practices. Included are statistical tables showing data on gross national product; labor force, by age group, economic sector, industry, class of worker, and occupational group; average weekly wages of manual workers; and other similar information.

MOLLUSCS:

Deoxyribonucleic Acids of Marine Mollusca, by Michael Smith and D. B. Quayle, Reprint No. 756, 2 pp., printed. (Reprinted from *Nature*, vol. 200, no. 4907, November 16, 1963, p. 676.) Technological Research Laboratory, 6640 NW Marine Dr., Vancouver 8, B. C., Canada.

MUSSELS:

El Mejillon como Primera Materia para la Conserva (The Mussel as Raw Material for Canning), by Buenaventura Andreu, 7 pp., illus., printed in Spanish. (Reprinted from *Informacion Conservera*, no. 119-120, November-December 1963.) Informacion Conservera, Colon, 62, Valencia, Spain.

NEWFOUNDLAND:

Newfoundland Fishing, by John Corlett, Laboratory Leaflet (New Series) No. 1, 20 pp., illus., processed, December 1962. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, England. Discusses history of the Newfoundland fisheries, hydrography and ice, cod stocks and fishing, cod catch and effort, haddock, ocean perch and flounder, and effect of fishing and future prospects.

NEW JERSEY:

Fish and Game Laws of New Jersey, 1964 and until Repealed, 221 pp., printed. Division of Fish and Game, Department of Conservation and Economic Development, P.O. Box 1809, Trenton, N.J. 08625.

NEW ZEALAND:

Foreign Trade Regulations of New Zealand, by Maurice E. Birch, OBR-64-4, 12 pp., printed, 15 cents, January 1964. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) The Government's import policy is aimed at using its foreign exchange for either essential producer goods to expand the economy or for non-locally manufactured consumer items. This report discusses trade policy, import tariff system, sales and other internal taxes, documentation and labeling and marking requirements. Also covers special customs provisions, nontariff import trade controls, New Zealand's export controls, United States foreign trade controls, and diplomatic representation between the two countries.

NORWAY:

Arsmelding og Rekneskap for Noregs Sildesalslag, 1963 (Annual Report and Accounts for Norwegian Winter Herring Sales Organization, 1963), 48 pp., printed in Norwegian, 1963. Noregs Sildesalslag, Bergen, Norway.

Arsmelding og Rekneskap for Sild- og Brisling-Salslaget, 1962 (Annual Report and Accounts for Norwegian Small and Fat and Sprats and North Sea Herring Sales Organization, 1962), 44 pp., printed in Norwegian. Sild- og Brisling-Salslaget, Bergen, Norway.

Fiskeflaten, 1962 (Fishing Fleet, 1962), Arsberetning Vedkommende Norges Fiskerier 1962--No. 13, 31 pp., illus., printed in Norwegian, 1963. Fiskeridirektoren, Bergen, Norway.

Fiskeristatistikk 1961 (Fishery Statistics 1961), 87 pp., illus., printed in Norwegian with English preface, table of contents, and summary, June 12, 1963. Fiskeridirektoratet, Bergen, Norway.

Norway Exports, no. 3, Autumn 1963, 89 pp., illus., printed. Export Council of Norway, H. Heyerdahls Gate 1, Oslo, Norway. A few facets of Norway's processing of fish are spotlighted in this issue. In particular, the progress of the fish-canning industry is reported, and likewise the cod-liver oil industry. Considerable space is devoted to packaging of various types and also to packaging materials, particularly paper and board. Fishing vessel research, development of sonar fish-detection equipment and echosounders, and production of fishing nets and lines are also emphasized.

"Toktprogram 1964" (Exploratory Cruise Program for 1964), article, Fiskets Gang, vol. 50, no. 4, January 23, 1964, pp. 65-72, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

Trawling Prospects Off West Norway, by Peter Woodhead, Laboratory Leaflet (New Series) No. 4, 20 pp., illus., processed, September 1963. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Lowestoft, England. Describes the results of fishing and echo surveys by the R/V Ernest Holt on the banks off West Norway, principally Svinoy and Halten Banks. Catches consisted mostly of coalfish and "spurdogs." There is also information from German and Norwegian sources.

OCEANOGRAPHY:

"Britain's National Institute of Oceanography," by Victor K. McElheny, article, Science, vol. 144, no. 3615, April 10, 1964, pp. 160-163, illus., printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington, D. C. 20005.

Denkschrift zur Lage der Meeresforschung (Memorandum on the Status of Oceanographic Research), by Gunther Bohncke and Arwed H. Meyl, 131 pp., illus., printed in German, 1962. Franz Steiner Publishing Firm, Wiesbaden, Germany. Includes chapters on international oceanographic organizations, tasks of individual research disciplines in oceanography, the present situation of research institutions engaged in oceanography in the Federal Republic, a description of a new research ship and a fold-in diagram showing her compartmentation.

The International Indian Ocean Expedition: A Status Report, by Irvin E. Wallen, 9 pp., illus., printed. (Reprinted from the Journal of the Washington Academy of Sciences, vol. 54, 1964, pp. 45-53.) Museum of Natural History, Smithsonian Institution, Washington, D. C. 20560. Out of the International Geodetic Year (IGY) of 1957-58, grew the Special Committee of Oceanic Research (SCOR), parent organization of the International Indian Ocean Expedition (IIOE). A member of SCOR had suggested that over an appropriate period of

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time many ships should visit the Indian Ocean, making standard observations and collecting data for a detailed description of its physical, chemical, biological, and geological characteristics. The Indian Ocean was chosen because it possesses unique geographical, meteorological, and hydrographic features, and also because little oceanographic research had been conducted there prior to 1957. Participants presently include 20 countries. The United States is represented by 14 vessels and 5 aircraft sponsored by Government and private agencies. Five shore stations in Madagascar and India cooperate with the expedition in administrative, logistic, and research matters. The Inter-Governmental Oceanographic Commission in Paris has responsibility for international interchange of published data. In addition to diverting vessels of American oceanographic institutions from research programs in the Atlantic or Pacific Oceans, the United States also has converted two vessels for use during the IIOE. One of these is the *Te Vega*, a two-masted steel-hulled schooner; the other is the *Anton Bruun*, formerly the Presidential yacht, *Williamsburg*, designated principal research vessel for biological oceanography in IIOE. In addition to routine determinations of physical and chemical characteristics of the sea water, and plankton sampling, the latter vessel undertakes other special projects. Intensive sampling with Gulf shrimp trawls, Isaacs-Kidd midwater trawls, gill nets, long lines, dip nets, aqualungs, and other devices assist in an evaluation of the fishery potential in the Indian Ocean. The distribution of adult tunas, marlins, and sharks are being studied by the U. S. Bureau of Commercial Fisheries in relation to water temperature and ocean circulation during the two monsoon seasons. The biological specimens collected are partially sorted on board the vessels, where they are preserved, carefully packed, and sent to the Smithsonian Oceanographic Sorting Center in Washington, D. C. At the end of 1963, over one million specimens, including 17,427 species of fish from 133 families, had already been sorted for further study.

"The Oceans and the Future," by Anthony Harrigan, article, *Navy*, vol. 7, no. 4, April 1964, pp. 6-10, illus., printed, single copy 25 cents. Navy League of the U. S., Mills Bldg., Washington, D. C. 20006. To view contemporary sea power in proper perspective, it is essential to consider the changing value of seaspace and the contents of the oceans, according to the author. The central point to consider is the unprecedented rise in the world's population. Where as sea power once was necessary to invasion of land areas, nations in the near future, if they are to feed their populations, must be sure of the harvests of the oceans. The nations will turn more and more to the seas for food, oil, water, and minerals as population pressures mount.

OREGON:

Foodfish for the Future, by Charles P. Selden and Irving W. Jones, Educational Bulletin No. 1, 22 pp., illus., printed, 1958. Fish Commission of Oregon, 307 State Office Bldg., 1400 SW 5th Ave., Portland, Oreg. 97201. Discusses the types of food fish caught in Oregon waters--salmon, bottomfish, albacore tuna, crabs, and clams; management of the fishery resources by the State Fish Commission; and initiation

of fishery management program by research biologists. Also covers putting management programs into action, operation and goals of salmon hatcheries, and importance of awareness by the public of fishery conservation programs.

OTOLITHS:

Role of Otoliths in Taxonomic Analysis of Fish, USSR, by D. K. Khalaturin, OTS 64-21244, 6 pp., printed, January 9, 1964, 50 cents. (Translated from the Russian, *Doklady Akademii Nauk SSSR*, vol. 152, no. 2, 1964.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C. 20235.

OYSTERS:

"Biochemical Studies on *Ostrea gigas*, X--On the Seasonal Variations of the Distribution of Copper and Zinc in Various Organs," by Akira Hayashi Kinki University, FUSE, Osaka, Japan, article, *Chemical Abstracts*, vol. 57, August 20, 1962, 5133e, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

Measurement of Shell Growth in Oysters by Weighing in Water, by Jay D. Andrews, Contribution No. 110, 11 pp., illus., processed. (Reprinted from *Proceedings of the National Shellfisheries Association*, vol. 52, 1961.) Virginia Institute of Marine Science, Gloucester Point, Va.

PERCH:

Perch Anatomy, a film, (16 minutes, sound, color or black and white). Audio Visual Center, Indiana University, Bloomington, Ind. Functions of external perch anatomy in relation to the environment; and dissection of the fish, illustrating digestive, excretory, circulatory, reproductive, and central nervous systems.

PESTICIDES:

"Pesticides--In Our Ecosystem," by Frank E. Egler, article, *American Scientist*, vol. 52, no. 1, March 1964, pp. 110-136, illus., printed. Single copy \$1. Sigma Xi, 51 Prospect St., New Haven, Conn.

PHILIPPINES:

Establishing a Business in the Philippines, by Kenneth A. Guenther, OBR 64-11, 16 pp., printed, February 1964, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) A report offering information helpful to United States citizens interested in organizing a business in the Philippines, was released recently by the U. S. Department of Commerce. To attract foreign capital the government has adopted a generally favorable investment policy. The major step in the creation of this policy was the removal of restrictions, early in 1962, on dividends, royalty and sundry remittances, and the repatriation of capital. The report discusses U.S. commercial interests in the Philippines, Government policy concerning foreign investments, business organization, and registry and bookkeeping requirements. Also covers trademarks and patents, labor and employment, taxation, bidding procedures for government procurement, and chambers of commerce.

PHYSIOLOGY:

"Psychophysics and Hearing in Fish," by William N. Tavolga, article, *Natural History*, vol. LXXIII, no. 3,

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March 1964, pp. 34-41, illus., printed, single copy 50 cents. The American Museum of Natural History, Central Park W. at 79th St., New York, N. Y., 10024.

POLAND:

Zjednoczenie Gospodarki Rybnej, 1964 (Fisheries Central Board, 1964), 41 pp., illus., printed in Polish and English. Zjednoczenie Gospodarki Rybnej, Swietokrzyska 12, Warsaw, Poland. This attractively illustrated booklet offers information on the status of the Polish fishing industry. Covers, in tabular form, development of the post-war fishing fleet; total landings, 1938-1961; fishing enterprises; fish-processing plants; wholesalers, retailers, and exporters; and scientific institutes and other institutes incorporated in the Fisheries Central Board. Also discusses briefly fisheries co-operatives, scope of the fishery export trade, the engineering company for refrigeration and mechanization of fisheries, and fisheries schools.

PREDATORS:

Spotlight on the American Whelk Tingle by D. A. Hancock, Laboratory Leaflet (New Series) No. 2, 11 pp., illus., processed, December 1962. Fisheries Laboratory, Ministry of Agriculture, Fisheries and Food, Burnham-on-Crouch, Essex, England.

PROTEINS:

"Comparison of the Efficiencies of Free Lysine and of Roller-Dried Skim Milk, Fish Protein, and Soybean Protein for the Supplementation of Wheat Bread," by L. E. Ericson, S. Larsson, and G. Lid (Royal Institute of Technology, Stockholm Sweden), article, Chemical Abstracts, vol. 58, June 10, 1963, 13053d, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

"Proteins from Petroleum Reported by Esso, BP," article, Oil, Paint and Drug Reporter, vol. 182, December 17, 1962, p. 5, printed. Schnell Publishing Co. Inc., 30 Church St., New York, N. Y. 10007.

"Studies on a Herring-Egg Phosphoprotein," by T. E. Barman, Nguyen-kim Bai, and Nguyen-Van Thoai, article, The Biochemical Journal, vol. 90, no. 3, March 1964, pp. 555-558, illus., printed, 40s. (\$6.75 in the United States). Cambridge University Press American Branch, 32 E. 57th St., New York, N. Y. 10022.

QUALITY:

"Studies on the Browning of Fish Flesh. X--Change of Reflectance by Heat Treatment," by Fumio Nagayama and Kimihiro Sano, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 28, August 1962, pp. 828-832, printed. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

RADIATION PRESERVATION:

"Recent Research on Food Preservation by Ionizing Radiation in Germany," by U. Schutzsack, article, Food Irradiation, vol. 3, April-June 1963, pp. A22-A25, printed. Interdepartmental Committee on Radiation Preservation of Food, U. S. Department of Commerce, Washington, D. C. 20230.

RADIOACTIVITY:

"Accumulation of Radioactive Strontium and Yttrium in Eggs of Marine Fish," by G. G. Polikarpov and V. N. Ivanov (Biological Station, Academy of Science, U.S.S.R.), article, Chemical Abstracts, vol. 57, October 15, 1962, 10370h, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

REFRIGERATION:

Kholodil'naia Tekhnika, no. 1, 1964, 80 pp., illus., printed in Russian with English table of contents. Kholodil'naia Tekhnika, U1. Kostyokova 12, Moscow I-434, U.S.S.R. (For sale by the Four Continent Book Corp., 822 Broadway, New York, N. Y. 10003.) Includes, among others, these articles: "Utilization of Polymer Films when Freezing and Storing Fish," by G. S. Konokotin and L. P. Zuikova; and "Ammonia Pump Circulation Cooling System of Reconstructed Fish Cold Store in Poti," by V. I. Matveyev.

RESEARCH VESSEL:

"To Sea in a Saucer," article, Business Week, no. 1798, February 15, 1964, pp. 88-89, 92, 94, illus., printed, 50 cents. McGraw-Hill, Inc., 330 W. 42nd St., New York, N. Y. 10036. The Cousteau diving saucer, designed by the man who invented the Aqualung, can submerge to 1,000 feet with safety and still provide a large degree of freedom. The saucer, which looks like a squashed ellipsoid, is less than 10 feet in diameter and about 5 feet thick. Propelled by two water jets powered by batteries, the vessel carries a pilot and an observer.

SALMON:

Abundance, Size and Age of Red Salmon Smolts from the Wood River System, 1963, by Michael L. Nelson, Informational Leaflet 37, 22 pp., illus., processed. Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska.

Bristol Bay Red Salmon, 1963--A Compilation of the Catch and Escapement Data, edited by Donald B. Siniff, Informational Leaflet 35, 185 pp., illus., processed. Department of Fish and Game, Support Bldg., Juneau, Alaska.

Forecast Research on 1964 Alaskan Pink Salmon Fisheries, by Wallace H. Noerenberg and others, Informational Leaflet 36, 55 pp., illus., processed, March 10, 1964. Alaska Department of Fish and Game, Support Bldg., Juneau, Alaska. In 1963, the Department of Fish and Game expanded research on Alaska's most important species, pink salmon, O. gorbuscha (Walbaum), into Southeastern Alaska, Cook Inlet, and Kodiak areas on the basis of work done since 1960 in Prince William Sound. Thus, the most important production areas came under study; packs of pink salmon in those areas accounted for over 53 percent of the total Alaska salmon pack of all species in 1963, and 47 percent in 1962. The primary objective of the present pink salmon research program is forecast of annual runs in each area. Accurate forecasts, within 20 percent of actual returns, will make it possible to manage and harvest the major pink salmon stocks far more efficiently, regardless of whether they are at high or low levels of production. The definition of optimum escapement, maximum sustained yield, and

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effects of logging are being studied where possible as secondary projects under the forecast program. This report discusses results of research in the four areas and presents statistical tables showing data on parent escapement, outmigration of salmon fry, catches, population densities, and other information.

Olfactory Perception in Migrating Salmon. III--Stimulants for Adult Sockeye Salmon (ONCORHYNCHUS NEKA) in Home Stream Waters, by U. H. M. Fagerlund and others, Reprint No. 755, 7 pp., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 20, no. 6, 1963, pp. 1457-1463.) Technological Research Laboratory, 6640 NW. Marine Dr., Vancouver 8, B. C.

2-Phenoxyethanol as a General Anaesthetic for Sockeye Salmon, by H. S. Sehdev, J. R. McBride, and U. H. M. Fagerlund, Reprint No. 754, 6 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 20, no. 6, 1963, pp. 1435-1440.) Technological Research Laboratory, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada.

SARDINES:

Determination of Vitamin K₂ in the Portuguese Sardine, by A. Forjaz, L. Brito, and L. Manso (Instituto Portugueso Conservas Peixe, Lisbon, Portugal), article Chemical Abstracts, vol. 54, July 25, 1960, 14494d, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

SHARKS:

Sodium Chondroitin Sulfate-Protein Complexes of Cartilage. III--Preparation from Shark, by Mark B. Mathews (University of Chicago), article, Chemical Abstracts, vol. 57, August 6, 1962, 3764d, printed, The American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

Sound Perception in Elasmobranchs, by W. J. Wisby and others, Contribution No. 493, 14 pp., illus., printed, 1964. (Reprinted from Marine Bio-Acoustics--Proceedings of a Symposium Held at Bimini, Bahamas, April 1963, pp. 255-268.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla. Results of a study to determine hearing function of sharks and other elasmobranchs. Discusses the sensory organs--labyrinth, lateral line, and ampullae of Lorenzini; unconditioned and conditioned responses to low-frequency sounds; field tests of the attraction of sharks to sounds of a struggling fish; and future plans for research in that field.

SHRIMP:

Freezing Preservation of the Shrimp. Development of This Industry in Morocco. Trials on the Value of Certain Substances Used as Additives in Freezing, by P. Chaponneaux, 80 pp., printed. These Veterinaire, Ecole Nationale Veterinaire, d'Alfort No. 3, Paris, France.

SMALL BUSINESS MANAGEMENT:

The Use of Consultants by Manufacturers, by David C. Ekey and W. David Robbins, Management Research

Summary, 2 pp., processed, 1963. Small Business Administration, Washington, D. C. 20416. The study on which the report is based shows an increasing use of management consultants by manufacturers in recent years. The results indicate that some firms have developed the art of utilizing consultants proficiently, while others are quite unsuccessful. From depth interviews with 75 firms, it was learned that where management had recognized that a problem existed and sought the assistance of a consultant, the consulting experience was usually quite satisfactory. The report includes fundamental principles for selection and successful use of consultants, as well as the basic causes for failure in consulting experience.

SMOKING:

"Electrostatic Smoking", article, Food Engineering, vol. 35, August 1963, p. 54, printed. Chilton Co., Chestnut and 56th St., Philadelphia 36, Pa.

"Influence on the Method of Smoke Generation on the 3,4-Benzopyrene Content in Smoke and Smoked Fish", by O. P. Gretskeya and others, article, Rybnoe Khoziaistvo, vol. 38, no. 3, 1962, pp. 56-62, printed in Russian. Rybnoe Khoziaistvo, V. Krasnosel'skaia 17, Moscow, U.S.S.R.

SOUTH AFRICA REPUBLIC:

Fisheries Development Corporation of South Africa Limited--Nineteenth Annual Report (Covering Period 1st October, 1962, to 30th September, 1963), 16 pp., printed in Afrikaans and English, February 14, 1964. Fisheries Development Corporation of South Africa Ltd., Seafare House, 68 Orange St., Cape Town, South Africa Republic. Presents brief reports on the state of the pilchard, maasbanker, mackerel, and spiny lobster fisheries; and activities of the Corporation. For the first time in 6 years, landings by the inshore fisheries of South Africa and South West Africa showed a slight decline.

SPAIN:

"Exportacao Galega de Conservas de Peixe em 1962" (Galician Exports of Canned Fishery Products in 1962), article, Conservas de Peixe, vol. XVIII, no. 214, January 1964, pp. 18-19, 21-22, printed in Portuguese. Sociedade da Revista Conservas de Peixe, Lda., Regueirao dos Anjos, 68, Lisbon, Portugal.

"Informe sobre Evolucion del Comercio Interior de Productos Pesqueros en 1963 (Report on Development of Domestic Trade in Fishery Products in 1963)", article, Boletin de Informacion, no. 64, January 1964, pp. 15-16, printed in Spanish. Sindicato Nacional de la Pesca, Paseo del Prado, 18-20, 6^a Planta, Madrid, Spain.

SPINY LOBSTER:

A Industria da Lagosta Espinhosa na Africa Austral (Um Estudo Economico) (The Spiny Lobster Industry in Southern Africa--An Economic Study), by Domingos Jose Soares Rebelo, 16 pp., printed in Portuguese with English summary. (Reprinted from Boletim da Sociedade de Estudos de Mocambique, vol. 32, no. 135, April-June 1963, pp. 65-83.) Sociedade de Estudos da Provincia de Mocambique, Lorenzo Marques, Mozambique.

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STANDARDS:

"AFDOUS: Association of the Food and Drug Officials of the United States," article, Quick Frozen Foods, vol. 24, March 1962, pp. 195-196, 198, 200, 202-210, printed. E. W. Williams Publications Inc., 82 Wall St., New York, N. Y. 10005. A complete publication of the AFDOUS frozen food handling code including: plant construction and layout; equipment design and construction; operating practices for processing as well as retail, transportation, and warehouse handling of frozen foods.

SWORDFISH:

Development of Long-Line Fishing of Swordfish in the U. S. and Canada, with Some Emphasis on Its Effect on the U. S. Swordfish Fish Market, by Ryoichi Aoki, 15 pp., printed in Japanese, December 15, 1963. Japan Frozen Food Exporters' Association, Tokyo, Japan.

TAGGING:

The Tagging of Fishes in Florida, 1962 Program, by Robert Topp, Professional Papers Series No. 5, 82 pp., illus., printed, December 1963. Florida State Board of Conservation, Marine Laboratory, St. Petersburg, Fla.

Tagging Reef Fishes in the Virgin Islands, by John E. Randall, Contribution 362, 41 pp., illus., printed. (Reprinted from Proceedings of the Gulf and Caribbean Fisheries Institute, Fourteenth Annual Session, November 1961, pp. 201-241.) The Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

TENNESSEE VALLEY AUTHORITY:

Fish and Wildlife, Valuable Natural Resources, TVA, 12 pp., illus., printed, 1964. Fish and Wildlife Branch, Tennessee Valley Authority, Norris, Tenn.

TROUT:

"Studies on Lipids of Wild Rainbow Trout," by Yai-chiro Shimma and Hisako Taguchi, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 28, January 1962, pp. 55-60, printed. Japanese Society of Scientific Fisheries, Shiba-Kaigandori 6, Minato-ku, Tokyo, Japan.

TUNA:

Brine Spray Frozen Tuna, Sodium, Potassium, Lactic Acid and Acid-Soluble Phosphorus in the Muscle, and the Influence Thereon of Thawing and Precooking, by N. Tomlinson and S. E. Geiger, Reprint No. 753, 5 pp., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 20, no. 5, 1963, pp. 1183-1187.) Technological Research Laboratory, 6640 NW. Marine Dr., Vancouver 8, B.C., Canada.

Catch Locality, Fishing Effort, and Length-Frequency Data for Albacore Tuna Landed in Oregon, 1951-60, by Robert J. Ayers and James M. Meehan, Investigational Report No. 2, 187 pp., illus., processed, August 1963. Fish Commission of Oregon, Research Division, Clackamas, Ore. By comparing environmental changes with variations in albacore fishing success it may be determined whether these changes are responsible for fluctuations in seasonal appearance, distribution, and relative abundance of albacore.

This report is a compilation of catch and fishing effort data for Oregon albacore landings which may be compared with the information compiled on the oceanic environment. Statistical tables and graphs present data on sampling intensity for the Oregon albacore fishery, 1951-60; Oregon albacore landings by year, month, and port; percent of total Oregon landings assigned to one-degree blocks, 1951-60; albacore catches by year; length frequencies for landings at Astoria, Coos Bay, and Newport, by year and month; catch localities by month; and length-frequency distribution by month.

Report of a Survey for Tuna in Western Australian Waters, by J. S. Hynd and D. Vaux, Report 37, 133 pp., illus., processed, 1963. Commonwealth Scientific and Industrial Research Organization, Division of Fisheries, Marine Laboratory, Cronulla, Australia. This is a report of tuna explorations carried out in waters off the southwestern corner of Australia, from July 31, 1961, to July 17, 1962; biological examination was made of almost all fish taken (chiefly southern bluefin, Thunnus maccoyii), and hydrographical observations were made. Although the survey plans provided for fishing on a commercial scale whenever fish were found, only one small catch was taken and landed; the rest of the catch, consisting entirely of small fish, was used for tagging and other biological purposes. The presence of three groups of tuna was demonstrated. Conclusion was that it is unlikely that the type of vessel used would be able to make successful fishing in this area by the pole-and-bait method.

TURKEY:

Balik ve Balikcılık (Fish and Fishery), vol. XII, no. 1, January 1964, 35 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balıkçılık Mudurluğu, Besiktas, Istanbul, Turkey. Includes, among others, articles on: "A simple Current-Measuring Bottle for Fishermen;" "Some Chemical Investigations on the Horse Mackerel Which are Caught in Black Sea;" and "Basic Researches on the Development of Fishery in Turkish Freshwaters, Lakes and Dams (Part I)."

Labor Law and Practice in Turkey, BLS Report No. 239, 76 pp., illus., printed, March 1963, 45 cents. Bureau of Labor Statistics, U.S. Department of Labor, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington D. C. 20402.) Discusses Turkey's geographic setting, manpower resources, culture and customs, education and health, and government in relation to labor. Also covers industrial relations; pay and allowances; hours of work and premiums; safety, insurance, and facilities; and employment practices. Included are statistical tables giving data on population, by province, chief cities, and age group; distribution of labor force, by economic sector, and occupation; average earnings, by economic section; and other related information.

TURTLES:

"The Fate of the Sea Turtles," by John Hillaby, article, New Scientist, vol. 20, no. 371, December 26, 1963, pp. 776-777, illus., printed, single copy 1s. (about 15 U. S. cents). Cromwell House, Fulwood Pl., High Holborn, London WC1, England. No other animals

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are more efficient at converting seaweed and other marine products into highly palatable eggs and meat than the sea turtles, but unless the present method of exploitation is rapidly changed the turtles seem doomed to extinction.

UNITED KINGDOM:

Fisheries of Scotland Report for 1962, Cmnd. 2022, 126 pp., illus., printed, 8s. 6d. (about US\$1.30). Department of Agriculture and Fisheries for Scotland, Aberdeen, Scotland. (Available from Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland.) Discusses principal accomplishments in the Scottish fisheries during 1962; means of capture and persons engaged--fishing fleet, number of fishermen, grants and loans to fishermen for purchase of vessels and gear; herring fisheries; whitefish fisheries; shellfish fisheries; and miscellaneous items--Outer Hebrides fisheries training program, byproducts production, and meteorological assistance. Also covers marine superintendence--coastal patrols, prosecutions for illegal trawling, seining, and other offences, and Trawling in Prohibited Areas Prevention Act, 1909; salmon fisheries--catch, value and employment, closed seasons, district boards, poaching and illegal fishing, drift-net fishing, and damage by seals to the fishery; fisheries research projects; and harbors--grants and loans for harbor improvement, and dredging. Appendices present statistical tables and explanatory material on herring distribution and disposal of landings; herring landings by area; methods of capturing herring; and whitefish--quantity and average price by species, fishing areas, landings by method and district, and foreign landing. Also included are information on salmon fisheries--annual closed seasons, details of catch, and report of Inspector; fisheries research--report of Director, and activities of Scottish Marine Biological Association laboratories; construction and improvement of harbors; and fisheries administration.

Foreign Trade Regulations of the United Kingdom, by Edward A. Leslie, OBR 64-14, 8 pp., printed, February 1964, 15 cents. Bureau of International Commerce, U.S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.) A report of value to businessmen interested in import-export trade with the United Kingdom. Since World War II, British tariffs have been gradually reduced on most products as a result of a series of multilateral negotiations held under the auspices of the General Agreement on Tariffs and Trade (GATT). The United Kingdom is an active member of the GATT, the Organization for Economic Co-operation and Development (OECD), and the European Free Trade Association (EFTA). The report discusses Britain's trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import trade controls, British export controls, United States export and import controls, and diplomatic representation between the two countries.

U.S.S.R.:

Developments in Fisheries of USSR, OTS 64-21431, 27 pp., illus., printed, January 30, 1964, 75 cents. (Translated from the Russian, Nauchno-Tekhnicheskii

skiy Byulleten' PINRO, nos. 1 and 4, 1962.) Office of Technical Services, U.S. Department of Commerce, Washington, D. C. 20235.

Recent Developments in Soviet Ichthyology, OTS 63-41336, 84 pp., illus., printed, \$2.25, December 11, 1963. (Translated from the Russian, Voprosy Ikhtologii, vol. 3, no. 3 (28), 1963.) Office of Technical Services, U.S. Department of Commerce, Washington, D. C., 20235.

Roe Size-Dependent Fish Fertility, Fresh Water Fish Distribution, and Parasitofauna of Pond-Raised Carp, USSR, OTS 64-21210, 42 pp., illus., printed, January 3, 1964, \$1.25. (Translated from the Russian, Voprosy Ikhtologii, vol. 1, no. 2 (19), 1961.) Office of Technical Services, U.S. Department of Commerce, Washington, D. C., 20235.

Soviet Studies on Fish, OTS 64-21480, 80 pp., illus., printed, February 4, 1964, \$2. (Translated from the Russian, Trudy Instituta Ikhtologii i Rybnogo Khozyaystva Akademii Nauk Kazakhskoy SSR, vol. 4, 1963.) Office of Technical Services, U.S. Department of Commerce, Washington, D. C. 20235.

WASHINGTON:

Washington State Department of Fisheries, 1962 Annual Report, edited by Don Reed, 210 pp., illus., printed, Washington State Department of Fisheries, Rm. 115, General Administration Bldg., Olympia, Wash. Includes information on the activities of the Department of Fisheries during 1962 in salt-water research--chinook tagging, Puget Sound salmon fisheries, ocean sport fishery, Puget Sound herring fisheries, Bellingham Bay water quality study, other-trawl fisheries, and 1962 troll season; and fresh-water research--prolonged fresh-water residence of juvenile fall chinook salmon, sonar fish counter, impoundment rearing study, and Columbia River scrapfish control study. Sections are also included on engineering and construction, fish farms, Columbia River fisheries, coastal investigations, power dam studies, stream improvement, sport salmon fishery during 1962, fisheries law enforcement, and reimbursable contract services program. Specialized problems are dealt with in chapters on the oysters projects, clam rearing, Willapa Bay shellfish management, coastal pink shrimp fishery, razor clam fisheries in 1962, fish feeding at hatcheries, egg takes at hatcheries, adult escapement to hatchery racks, and fish planted from State salmon hatcheries in 1962. A considerable portion of the report is devoted to 1962 fisheries statistics on commercial landings and fishway counts.

WEATHER CHARTS:

The following processed weather charts are published by the Weather Bureau, U.S. Department of Commerce, Washington, D. C., and are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, 10 cents each. Charts show stations displaying small craft, gale, whole gale, and hurricane warnings; explanations of warning displays; and schedules of AM and FM radio, TV, and radiophone stations that broadcast weather forecasts and warnings.

Coastal Warning Facilities Chart, Eastern Florida, 1964.

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Coastal Warning Facilities Chart, Point Conception, Calif. to Mexican Border, 1964.

WHALE MEAT:

"Utilization of Whale Meat in Sausage Manufacture," by G. Babin and V. Gorbakov, article, *Chemical Abstracts*, vol. 58, January 7, 1963, 875f, printed. The American Chemical Society, 1155 16th St. NW., Washington, D. C. 20006.

WHALES:

"Sperm Whale Chase," by K. Godfrey, article, *Fisheries Newsletter*, vol. 23, no. 2, February 1964, pp. 14-15, 17, illus., printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia. A 2-year survey of sperm whale resources off the West Australian coast is being undertaken by the Commonwealth Scientific and Industrial Research Organization's Division of Fisheries and Oceanography under a £24,000 grant made by the Minister for Primary Industry from the Fisheries Development Trust Account. Aerial spotting, which will provide a substantial part of the information needed, started in April 1963, and this article describes some aspects of that work.

WHALING:

Verslag over het Zeventiende Boekjaar Lopende van 1 Juli 1962-30 Juni 1963 (Report of the Netherlands Whaling Company for the Fiscal Year July 1, 1962-June 30, 1963), 13 pp., printed in Dutch. Nederlandse Maatschappij voor de Walvisvaart N. V., Amsterdam, Netherlands.

"Value of Whale Products Falls," by D. J. Gates, article, *Fisheries Newsletter*, vol. 23, no. 2, February 1964, pp. 16-17, illus., printed. Fisheries Branch, Department of Primary Industry, Canberra, Australia. Estimated value of whale oil and byproducts in 1963 was £512,000, compared with £1,006,000 in 1962. Total number of whales taken was 686 (88 baleen, 598 sperm), 623 fewer than in the previous season. The International Whaling Commission (of which Australia is a member) meeting in July 1963 agreed that 3 species of baleen whales, the blue, fin, and humpback, should be further protected, and in regard to humpback whales agreed to prohibit their capture for an indefinite period in all waters south of the equator.

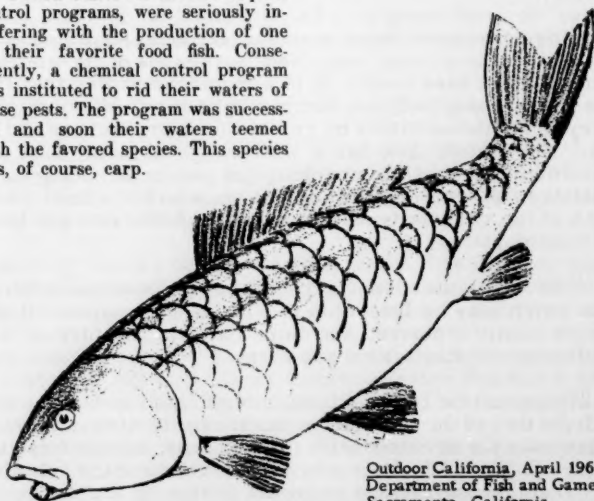


A Difference in Philosophy

The introduction of carp into North America during the late 1800's is viewed by most anglers and fishery managers as a mistake of gigantic proportions. During the intervening years, carp and similar species—generally classed as "trash fish"—have been the objects of extensive, expensive, and often futile eradication campaigns. Even small numbers of carp in favorite trout and bass waters evoke demands from anglers to "do something" to get rid of them. In this country, then, the carp is damned, despised, and destroyed.

A brief note in a recent issue of *The Progressive Fish Culturist* is of particular interest since it dramatically illustrates the differences in outlook between East and West. In India, a country badly in need of animal protein, fishery workers were having problems—as they seem to have all over the world. Mosquitofish, the same species so popular in

the United States for use in mosquito control programs, were seriously interfering with the production of one of their favorite food fish. Consequently, a chemical control program was instituted to rid their waters of these pests. The program was successful and soon their waters teemed with the favored species. This species was, of course, carp.



Outdoor California, April 1963
Department of Fish and Game
Sacramento, California

THE METAL FOOD CONTAINER AS THE REGULATORY OFFICIAL SEES IT

The very ruggedness of the metal container for packing food can lead to problems, says George P. Larrick, Commissioner of Food and Drugs, U. S. Department of Health, Education, and Welfare, in an address presented at the National Canners' Convention, Dallas, Texas, February 4, 1964. Excerpts from the talk follow:

"It is the very ruggedness of the metal container--the familiar tin can--which, because it is taken so much for granted, can lead to problems that I have been invited to comment upon. Our inspection of canning plants raises the question in our minds whether too much dependence is sometimes put in the ruggedness and fool-proof nature of cans. We see instances during the shipment, unloading, and conveying of empty cans and the subsequent handling of filled cans where the cans are treated so roughly that we wonder if they will be able to perform properly their function of maintaining an airtight and bacteria-tight barrier around their food contents. For example, cans are to an increasing extent being shipped jumble-packed in bulk containers, dumped into high speed unscramblers, and moved up, down and around by fast conveyors. There are many opportunities for them to come into violent contact with each other and with other objects. If the impact occurs on the lip of the can, may not a distortion occur that will result in an imperfect double seam when the lid is applied?

"Coming from the doubler seamer, cans are often allowed to fall into retort baskets or onto conveyor tracks in such a way that, we fear, the newly formed double seam or some other portion of the can may be ruptured or bent. The break in the integrity of the seal may be only momentary under the force of the impact, but this can be particularly dangerous if it occurs after processing and cooling when the can is rolling along wet, nonsterile, or even insanitary surfaces where contaminated droplets of water may be sucked in during the temporary rupture.

"The hazards are multiplied as the speed of can-closing operations is increased and as labor-saving machinery replaces manual procedures. We are sure you agree that repeated reappraisals of safeguards are necessary to reduce and keep such hazards to a minimum.

"Improvements in can manufacturing technology have inevitably introduced other factors that invite a close look. New techniques of tin-plating yield thinner protective coatings of tin over the base metal. It is our understanding that the coatings are more uniform and have fewer imperfections, but possibly do not offer as great protection against mechanical injury or chemical attack by certain food products as did the old, heavier, hot-dipped platings. The canner now has a wide range of metal base plates and weights of tin coatings from which to choose for packing his products. Generally this choice is made with the assistance of the can company scientists who know best the chemical and physical characteristics of the various types of cans and which ones are best adapted to the food product under consideration.

"New methods of fabricating the steel base plate have resulted in a thinner and lighter plate which may be less able to withstand rough handling, but we are also told such plate is more highly tempered and more likely to fracture as it is rolled into the tight angles that result when double seams are formed with the thinner plate.

"The situation is sometimes complicated by the use of lids made from tin plate differing from that of the can body in thickness, temper, and weight of coating. In other instances lacquered ends are used with plain bodies, and perhaps vice versa. This brings up again the possibility of faulty seals and nonsterile cans. It also stresses the need for frequent and careful examinations of double seams by trained specialists in the cannery to see that closing machines have the proper seaming rolls, chucks, etc., and are kept in proper adjustment.

(Continued on next page)

"In the past, as regulatory officials we have felt a measure of reassurance in the belief that if the seams were faulty and the can leaked and became nonsterile, nothing worse than ordinary spoilage with obvious souring or gas formation would occur. This would be a financial loss to the packer, but posed no health hazard to the consumer who, even if the spoiled can reached her hands, would recognize its condition and reject it. The occurrence of Type E botulism in canned tuna last year, resulting in two deaths, fully demonstrated the danger that may lurk in cans with imperfect seals, for this appears to have been an important factor in that case. We have become convinced that we must now improve our own efforts to assure consumer protection against such rare occurrences.

". . . It is, of course, the canner's responsibility, as well as in his own interest, to maintain a close inspection of his empty and his closed cans to see that such injury does not occur and to spot and correct circumstances that make it likely. One of the points that our inspections are designed to cover will be the attention that the cannery gives to this matter. Other points will include the sanitary condition of can runways and the chlorine content of cooling water. . . .

"In conclusion, let me commend the industry, can-makers, and canners alike, on their record of producing billions of cans of safe, high-quality foods. At the same time I bespeak your continued care and watchfulness lest that splendid record be marred. Today, from a public relations point of view, one serious error in one plant can react to the great harm of an entire industry regardless of their over-all excellence."



RADIATION AND FOOD

Consumers are hearing more and more about foods treated with some form of "radiation" to preserve them, or to kill insects or insect eggs, or to prevent sprouting, or to accomplish some other purpose.

They have begun to ask the U. S. Food and Drug Administration (FDA) questions about such "irradiated" foods.

How safe is radiation-processed food? Under the requirements of the Food Additives Amendment of 1958, any food treated by irradiation must be proved safe to the satisfaction of FDA scientists before it can be legally marketed.

The irradiation of two foods, namely canned bacon and bulk wheat, has already been approved by FDA, and petitions for irradiation of a number of other foods are currently under consideration or may be expected soon.

Clearance for the irradiation processing of canned bacon and bulk wheat was based on the evaluation of extensive data submitted by the U. S. Army Quartermaster Research Organization and others. The data included animal feeding studies conducted over many years which conclusively established that the irradiated foods under consideration are as wholesome and nutritious as conventionally-processed foods. Other data show that these foods, irradiated according to approved processes, do not become radioactive and do not retain any lingering activity from irradiation. ("FDA Memo for Consumers," U. S. Food and Drug Administration, February 19, 1964.)

EDIBLE CRABS

Crabs are members of the Crustacea, a class of the great invertebrate phylum Arthropoda, animals with jointed legs and a hardened outer covering, or exoskeleton. Most crustaceans are aquatic animals, and one of the distinguishing characteristics of the class is that they breathe by means of gills. The members of the other classes of Arthropoda, such as the insects, spiders, and centipedes, are essentially terrestrial animals. Crustaceans are the arthropods that often swarm in the sea as the insects swarm on land, and there is hardly a way of life in the sea not followed by some member of this diversified class.



Hermit crabs are probably the most familiar anomurans, but one very important commercial species, the king crab of Alaska, is also a member of that order.

All crabs possess five pairs of legs, and the first pair is always chelate, that is, equipped with pincers. In one group of crabs, the swimming crabs, the end segments of the last pair of legs are flattened. These flattened segments are used as sculling organs and enable the crabs to swim rapidly.

The true crabs range in size from some not larger than a grain of wheat to others that are the largest known crustaceans. A record specimen of the giant spider crab of Japan (*Macrocheira kaempferi*) measured $12\frac{1}{2}$ feet between the outstretched claws. That giant crab has very long, slender legs, and the body of the animal measures about 15 inches across.

There are many orders in the class Crustacea. Crabs belong to the order Decapoda, a name which refers to the fact that the members of this order have five pairs of legs. Some other familiar decapods are shrimp, crayfish, and lobster. The order is further divided into suborders, and all the true crabs are placed in the suborder Brachyura. The name is quite appropriate for this group, for the abdomen, or tail, is a shortened flap that is folded under the body. The suborder Anomura also contains a number of species that are commonly called crabs because of similarities in structure and habits to the true crabs. The members of this order have a somewhat reduced abdomen which is not as permanently flexed under the body as in the Brachyura.

--"Edible Crabs of the United States,"
Fishery Leaflet 550,
U. S. Bureau of Commercial Fisheries,
Washington, D. C. 20240.

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